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ABSTRACT

In 1990, a study was conducted to determine the value of an Associate in Arts (AA) degree to 2,810 community college graduates from 5 Florida schools 8 years following graduation. By cross-matching the graduates social security numbers with both the State University System Student Data Course File and the Department of Unemployment Compensation Insurance database, graduates were subdivided into three cohorts (referred to as FATE's) and an extensive demographic, educational and economic database was compiled. FATE #1 consisted of AA graduates who did not transfer to a state university. FATE #2 included those graduates who transferred to the university, but did not graduate prior to the spring 1988 semester. FATE #3 consisted of those AA graduates who transferred to a state university and completed a baccalaureate degree. The mean annual earnings for each cohort were compared, controlling for the general type of business or industry in which the graduates were employed. In addition, employer interviews were conducted for a subsample of FATE #1 graduates. Study results included the following: (1) a higher differential rate of return was indicated for FATE #1 over FATE #3 graduates; (2) there were no significant differences in the aggregate mean annual earnings or in the number of weeks employed among individuals in all three FATE's; (3) employers indicated a marked preference for AA graduates over high school graduates with similar experience; and (4) for occupational categories in which a baccalaureate was required to even apply, FATE #3 had significantly higher mean annual incomes. The employer test instrument is included. (JMC)

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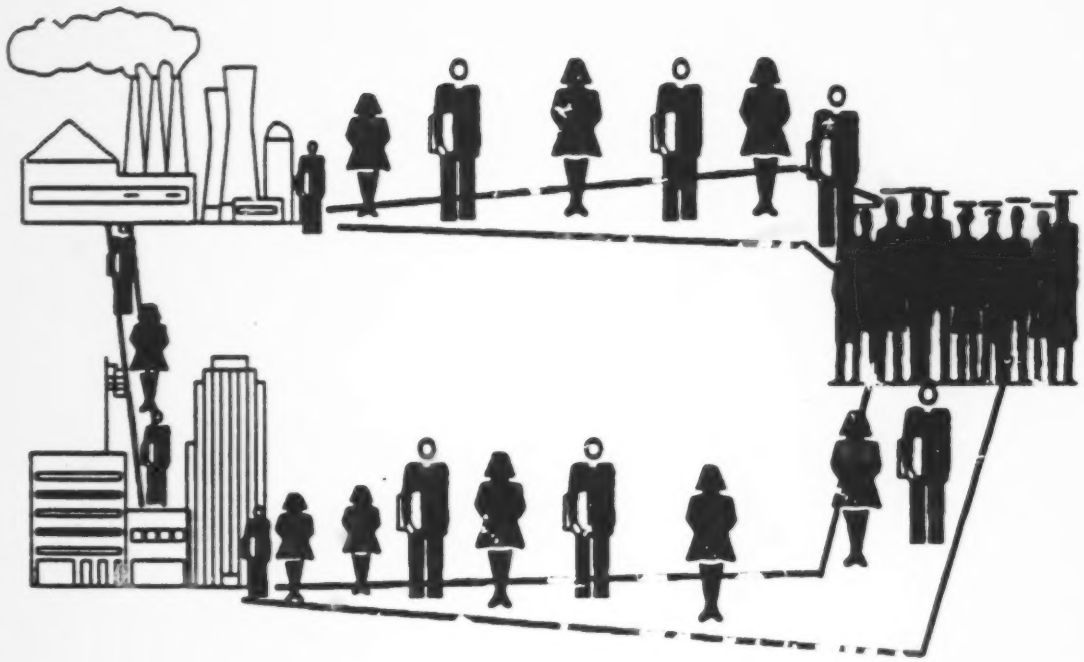
The Value of an Associate in Arts Degree To the Community College Graduate Who Does Not Transfer to the University



R. Bruce Judd

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FOREWORD

One of the specific benefits of an institute in a university setting lies in the ability of the structure to foster research that either supports, clarifies, or disagrees with the conventional wisdom of the commonly accepted mythology. This study represents that kind of research effort.

Dr. Bruce Judd, Director of Management Information Services at Edison Community College in Ft. Myers, Florida has made a specific contribution in this instance to the validity of the Associate in Arts degree. The value of this degree to at least 50% of the graduates is thoroughly analyzed and evaluated herein. Conventional wisdom has often raised serious questions about the value of the degree to the recipient and/or to the recipient's employer. Some have even asserted that an individual who had achieved high school graduation was better off economically than a two year associate degree graduate.

The Institute of Higher Education is pleased to present this study in hopes that some clarification of these and other related questions will be in order. This report will assist in providing additional information that will be used in evaluating community colleges and their graduates. It will also provide a model for other researchers to use in confirming the information.

We are especially appreciative of those colleges who are active members of Florida's Interinstitutional Research Council (IRC) for the support they provided in conducting this study. This research was a part of the IRC's agenda for 1988 and 1989.

We also are pleased to recognize Dr. Judd's accomplishment in being recognized by the Council for Universities and Colleges of the American Association of Community and Junior Colleges as being the recipient of the 1989 Dissertation of the Year Award. We are pleased that both Dr. Judd and the IHE are so recognized.

Dr. Judd also received the L.V. Koos Scholarship Award during his doctoral work at the University of Florida. In this role he joins such others as Dr. Leon Henderson, Dr. Enid Jones, Dr. Jim Heck, all of whose studies have been nationally recognized and all of whom have been students working with the Institute of Higher Education.

We are especially indebted to Dr. John Nickens, Associate Director of the IRC and to Ms. Christina Aslan who contributed to the production of the monograph.

James L. Wattenbarger, Director
Institute of Higher Education
Gainesville, Florida

August, 1990

THE VALUE OF AN ASSOCIATE IN ARTS DEGREE TO THE COMMUNITY COLLEGE GRADUATE WHO DOES NOT TRANSFER TO THE UNIVERSITY

EXECUTIVE SUMMARY

In the 1980-1981 academic year, five community colleges in Florida graduated 2810 students with Associate in Arts degrees. During the next eight years these graduates pursued a variety of employment and academic paths. The purpose of this research was to examine the value of the Associate in Arts degree to community college graduates eight years following graduation.

Theoretical Foundations: The value of the Associate in Arts degree was evaluated within the framework of the B. A. Weisbrod's postulated direct private and social benefits that are a result of completing additional years of education. Weisbrod divided the benefits into direct and indirect benefits for both the student and the greater society in which the student is a participant. The primary direct benefits to the student proposed by Weisbrod were

(a) a direct financial return in the form of income,

(b) a financial option return in the form of the opportunity to obtain further education,

(c) increased opportunity options through a broadening of individual employment opportunities, and

(d) education acting as a hedge against job displacement due to technological change.

The principle direct social benefits suggested were

(a) an increase in labor productivity,

(b) an increased tax base and a lower need to incur social costs, and

(c) a general increase in social welfare by development of a greater public-spiritedness or social consciousness.

Methodology: The direct financial returns to the student were evaluated by examining two distinct aspects of the direct financial returns. First, an estimate of the internal rate of return on investments in education made by all Associate in Arts degree graduates was calculated. Second, the direct financial returns were also estimated by comparing the mean annual earnings received by groups of graduates with different levels of educational achievement. Graduates within each group were disaggregated into Standard Industrial Classification (SIC) divisions and the mean annual earnings for each cohort were compared controlling for the general type of business or industry in which the graduates were employed.

The financial options returns were estimated by examining the availability of employer-sponsored educational programs designed to promote further education among employees that have only an Associate in Arts degree and the potential benefits available to individuals who secure additional education while employed.

The opportunity options were assessed by examining the distribution of graduates within SIC divisions to determine if differences in education could account for perturbations in hiring practices that would potentially cause the preferential distribution of Associate in Arts graduates within certain job categories. Finally, the perceptions of

a small subset of employers of the graduates about the value of an Associate in Arts degree as a hedge against technological displacement of skills was assessed though a direct interview process.

Finally, the direct social benefits were assessed by comparing the mean number of weeks employed for groups of graduates with differing amounts of total formal education. This variable was a surrogate that would reflect differences between groups of graduates in the income available for taxation, labor force productivity, and also differences in costs to society for increased unemployment compensation or social welfare programs.

By cross-matching the graduates social security numbers with both the State University System Student Data Course File and the Department of Unemployment Compensation Insurance data base, the graduates were subdivided into three cohorts [referred to as FATE's] and an extensive demographic, educational and economic data base was compiled. FATE #1 consisted of graduates who did not transfer into a state university or did not complete over 12 credit hours of university credit within the eight years following graduation, FATE #2 included only those graduates who transferred to the university but did not graduate, and FATE #3 contained those graduates who transferred to a university and successfully completed a baccalaureate degree.

Results: Graduates in FATE #1 compared favorably with the graduates in FATE #3 in several ways.

a) A differential rate of return comparing FATE #1 and FATE #3 indicated a higher rate of return for graduates in FATE #1 (5.8% higher without the alpha coefficient and 6.2% using the alpha coefficient).

b) By using an ANOVA regression model to compare incomes of graduates in all three FATE'S, there were no significant differences in the aggregate mean annual earnings of all individuals in all three FATEs or in five of eight Standard Industrial Classification (SIC) divisions.

c) There were also no significant differences in the number of weeks employed for all three FATEs. With the exception of the Retail SIC division, there were no significant differences in the financial opportunity options offered within the current job market.

In addition, employers indicated a marked preference for an Associate in Arts degree graduate over a high school graduate with similar experience. The employers interviewed offered a wide variety of potential educational opportunities for Associate in Arts degree graduates and were much more supportive of Associate in Arts degree graduates pursuing further education than they were of baccalaureate degree graduates who want to pursue graduate studies.

The principal differences observed between FATE #1 and FATE #3 occurred within SIC divisions in which a baccalaureate degree was required to even apply for positions of responsibility. In the Retail and General Services SIC divisions, graduates in FATE #3 had significantly greater mean annual earnings than individuals in FATE #1 or FATE #2. However, in the Public

Administration division, where experience had a greater influence on employment decisions than education, the mean annual earnings of FATE #1 were significantly greater than individuals in FATE #3.

Conclusions: The conclusions to be drawn from this study must be viewed in light of the limitations inherent within the dataset and the specific population from which these data were gathered. When using the framework of the benefits to be derived from increases in human capital which result from investments in education, the results strongly suggest that in the first eight years following graduation with an Associate in Arts degree, the graduates who did not continue their education compare very favorably with those graduates completed their baccalaureate degree in seven out of nine Standard Industrial Classification [SIC] divisions.

This conclusion is supported by virtually every direct comparison utilized within this study.

1. The rate of return was greater for those individuals who did not continue their education than for all individuals who completed their baccalaureate degrees.

2. There was no significant difference between the mean annual earnings of all individuals who did not continue their education when compared to individuals who completed their baccalaureate degrees.

3. When the graduates are disaggregated into individual Standard Industrial Classification divisions, for over 50% of all of the graduates there was either no significant difference between the mean annual earnings of the three groups or for individuals who did not continue their education and were employed by a federal, state

or municipal governmental agency, there were significantly greater mean annual earnings than for individuals who completed their baccalaureate degree working in the same SIC division. Only in the General Service and Retail divisions did individuals who completed their baccalaureate degrees have significantly greater incomes than the individuals who did not continue their education. These graduates were working principally in health care, legal, social service or management positions which usually require a minimum of a baccalaureate degree as an entry level credential for employment.

4. With the exception of the Retail division in which a disproportionate number of individuals who did not continue their education were employed in low paying positions, there was no significant difference between those graduates who did not continue their education and those graduates who completed a baccalaureate degree in terms of the number of individuals employed in any of the other SIC divisions, therefore, job market factors had a much greater influence on the opportunity for employment than the total amount of education an individual has beyond high school.

5. Although there were very few positions in which an Associate in Arts degree was a specific requirement, almost all employers interviewed stated that in a hiring situation where candidates were either lacking any formal job experience or when applicants had similar credentials, the Associate in Arts degree was a distinct "plus" when compared to an individual with just a high school diploma. The employers attributed this hiring advantage to specific academic or "maturity" factors perceived by the employers to be present in Associate in Arts degree graduates as a group. The principle thrust of the comments from employers supported Weisbrod's suggestion that the more educated employee is more readily trained, therefore, additional education in this context acts as a hedge against the technological displacement of skills.

6. A comparison of the total number of weeks worked for a five quarter period or for a standardized year, indicated that there were no significant differences in the number of weeks worked in any of the three groups of graduates. This implies that the direct social benefits from individuals in all three groups were not significantly

different and the total costs incurred by society were equivalent.

Summary: When all components of Weisbrod's benefits of further education are viewed as a whole, it is evident that eight years following graduation with an Associate in Arts degree, individuals who complete a baccalaureate degree have a distinct set of economic advantages over individuals who did not continue their education only in SIC divisions in which specific academic training is essential for initial employment. Overall, slightly less than 50% of all individuals in these two cohorts are in the General Services and Retail SIC divisions. These individuals do conform to Weisbrod's theoretical structure. For the remaining 50% of all graduates, however, the results indicate that in specific SIC divisions, there are greater or equivalent direct financial returns, financial option returns, or opportunity options. In hiring decisions, the individuals with just an Associate in Arts degree have a distinct advantage over their most frequent competition, high school graduates, for most entry-level positions. The employers perceive Associate in Arts degree graduates as a more malleable employee in terms of initial training and future job related training. These employer perceptions would then strongly support Weisbrod's assertion that additional education allows for a greater resistance to a technological displacement of skills.

When considering the value of an Associate in Arts degree within the theoretical framework proposed by

Weisbrod, the Associate in Arts degree alone would seem to have a similar or greater value for graduates when compared to individuals with additional education in over half the business fields examined. In particular the Associate in Arts degree graduates have had a specific and distinct affect on the level of education of public service employees in the state of Florida. It is immediately apparent that for the areas of retail sales and general services, the completion of a baccalaureate degree does provide direct benefits both financial and in terms of opportunities available.

The most important conclusion to be drawn from the results of this research is not which degree is "better", but for over half of the graduates tracked by this research, the Associate in Arts degree alone has a distinct set of benefits which have never been reported before. This finding alone should point out that the Associate in Arts degree graduate who does not transfer to the university should not be considered a failure in terms of the effectiveness of the community college to fulfill its mission, but the Associate in Arts degree should be considered as a valid credential worthy of being incorporated into the total evaluation of the effectiveness of a community college in providing its district with an educated and readily trainable work force.

CHAPTER I
AN OVERVIEW

Virtually every assessment of community college effectiveness has utilized the postgraduation accomplishments of the community college's graduates as a primary guide to the success of each institution in fulfilling specific components of the mission of the college. The most common technique for analyzing institutional effectiveness has been follow-up studies which usually include the placement rates of vocational program graduates and the university transfer rates of Associate in Arts degree graduates. Inherent within studies of this type is the underlying assumption that community college graduates enter the job market using either the Associate in Science degree or complete a baccalaureate degree and use this credential when entering the job market.

Recent literature has repeatedly pointed to a national trend toward increasingly lower transfer rates from community colleges to universities. This trend implies that more and more Associate in Arts degree graduates are not actively pursuing a baccalaureate degree immediately following graduation, but are either entering the workforce or maintaining a position held while completing an Associate in Arts degree. If community college graduates with Associate in Arts degrees are not transferring to a university then the graduates must, by default, be using an Associate in Arts degree as a credential in the job market.

It was the purpose of this study to examine the relative value of the Associate in Arts degree to community college graduates who did not transfer to a university. These graduates pursued careers following graduation in lieu of pursuing further education. In addition, it is proposed that community college researchers have overlooked an important aspect of the overall effectiveness of a community college if the Associate in Arts degree is not considered as a positive contributor to an individual's human capital. This positive contributor can be estimated by examining the economic returns to the graduate which accrue following graduation with an Associate in Arts degree.

It is important to recognize that studies of this type would have been almost impossible to undertake only a few years ago. If it were not for the help and support of state agencies such as the Occupational Identifier Project (OIP) of the Florida Department of Education and the Florida Community/Junior College Interinstitutional Research Council (IRC) of the University of Florida, this study would have not have been possible. The OIP provided access to the Florida Department of Labor Statistics Unemployment Compensation Database which included the required economic data and the IRC provided access to the State University System Student Data Course Files which included data for all of the students attending any of the nine Florida state universities during the eight years

following the graduation date of the population being followed. Both the ready access to the available databases and the generous contribution of mainframe computer time by both agencies were the primary factors which provided an atmosphere in which this study could be conducted and the results compiled in a reasonable span of time.

The Purpose of the Study

The purpose of this study was to determine if the Associate in Arts degree has value as an investment to graduates who do not continue on to baccalaureate degree programs. The value of the degree was estimated within the framework of the benefits derived from education as described by Weisbrod (1964). Weisbrod divided the benefits from additional education into direct and indirect benefits to the student and direct and indirect benefits to the greater society in which the student was a participant. The primary direct benefits to the student outlined by Weisbrod (1964) were (a) a direct financial return in the form of income, (b) a financial option return in the form of an increased value for the opportunity to obtain further education, (c) increased opportunity options through a broadening of individual employment opportunities, and finally, (d) education acting as a hedge against job displacement due to technological change. The principle direct social benefits were outlined as (a) an increase in labor productivity, (b) an increased tax base and a lower need to incur costs, and (c) a general increase in social

welfare by development of a greater public-spiritedness or social consciousness.

The direct financial returns to Associate in Arts degree graduates were examined by using two separate analyses. First, an internal rate of return was calculated for a random sample of the graduates (n = 572) and it was used to estimate the returns to graduates with differing postgraduation educational experiences. Second, the direct financial returns were also compared by using the incomes received by groups of graduates disaggregated into Standard Industrial Classification (SIC) categories and subdivided into groups with differing postgraduation educational experiences.

The financial option returns were analyzed principally by examining the availability of employer-sponsored educational programs and the job-oriented benefits which could result from the completion of additional education. The opportunity options were assessed by examining the distribution of graduates within SIC categories to determine if differences in education could account for perturbations in hiring practices that would potentially cause the preferential distribution of Associate in Arts graduates within specific employment categories.

Finally, the perceptions of employers of Associate in Arts degree graduates were compiled into a separate database and used to determine the employer-perceived skills that are viewed as having been acquired or improved

upon as a result of having completing an Associate in Arts degree. These employer-perceived characteristics of Associate in Arts degree graduates, will be placed into a logical framework in which education could act as a hedge against technological displacement of skills by extending a graduate's willingness and ability to learn new tasks. The employer opinions were assessed though a direct telephone interview process.

The direct social benefits were assessed by comparing the mean number of weeks employed in groups of graduates with differing total amounts of formal education. This variable was considered to be a surrogate that reflects differences between groups of graduates in the amount of income available for taxation, the labor force productivity, and also the differences in costs to society for additional unemployment compensation.

Although it is impossible to ascertain every conceivable direct student and social benefit, a multifaceted approach to the total analysis was utilized to examine a specific set of interrelated benefits. The multilevel analysis was utilized to construct an intellectual and fiscal framework in which an individual with only an Associate in Arts degree could be reasonably compared to other individuals who followed alternate academic paths following graduation with an Associate in Arts degree.

Assumptions

A fundamental assumption upon which the entire area of human capital gain and the study of the benefits of education is predicated is the assumption that education and income are related in some meaningful way. Several lines of thought emerge when this relationship between education and income is examined. Quattrociocchi (1980) suggested several basic hypothetical mechanisms by which education and income could be related:

1. Education is merely reinforcement for something that is inherent within the individual (i.e., individual ability, family background, personal goals).

2. Education increases individual productivity because of various cognitive and affective skills produced.

3. Education does not necessarily increase individual productivity, but confers a "credential." Employers exclude non-credentialed employees from high paying jobs. (p. 27)

This study focused primarily on numbers 2 and 3 of Quattrociocchi's suggested mechanisms.

Methodology

Historically, the analysis of the contribution of education to both society and the individual has been determined by the use of investment theory and the calculation of the rate of return on an investment in human capital. The rate of return can be determined for society in general by determining the social rate of return and for the individual through the private rate of return. This study focuses exclusively on the private rate of return.

Because of the desire for this analysis to reach beyond simply the financial impact of the completion of an Associate in Arts degree, the data collection consisted of three interdependent steps. The data analysis, by necessity, also required a series of both quantitative and qualitative assessments of specific aspects of the economic and social value of the Associate in Arts degree to the graduate who does not attempt to complete a Baccalaureate degree.

The Collection of Data

Assembly of the Initial Database

In an attempt to represent as diverse a population as possible, data were requested from five community colleges within Florida. The participating colleges were selected based on the institution's geographic location within the state, its size, and the availability of data. The institutions chosen for the study represented the three primary geographic regions of the state, both coasts, and the central corridor of the state. Institutional size ranged from approximately 1,000 FTE to approximately 10,000 FTE. Four institutions are also designated as vocational/technical centers. The institutions designated vocational/technical centers offer a broader range of courses in the technical areas than the remaining institution. All five institutions offer a broad range of traditional transfer courses and consider the transfer program a major component of the institutional mission.

Table 1-1

Definition of Each FATE

FATE #1 - AA graduates who did not register for courses within the state university system, or who did not make significant progress towards a baccalaureate degree (<13 total credit hours)

FATE #2 - AA graduates who successfully transferred to a state university, completed 13 or more credit hours, however, failed to graduate prior to Fall 1987.

FATE #3 - AA graduates who successfully transferred to a state university and completed a baccalaureate degree or were registered in postbaccalaureate programs.

Each participating institution submitted a data tape or a typed list of the 1980-81 (Fall 1980 through Summer 1981) Associate in Arts graduates. The data elements were assembled into a single data set and compared to data sets contained within the SUS Student Data Course File for each semester from Fall 1981 through Fall 1987. The two data sets were cross-matched on the Associate in Arts graduates' social security numbers. From this cross-matching all of the 1980-81 Associate in Arts graduates could be separated into three subsamples which will be referred to as FATE #1, FATE #2, and FATE #3 (see Table 1-1). FATE #1 consisted of the Associate in Arts graduates who have not registered for courses within the state university system or who have not made significant progress towards a baccalaureate degree (less than 13 credit hours in seven years). FATE #2 included only those Associate in Arts graduates who

successfully transferred to a state university and completed 13 or more credit hours but who had not graduated prior or during the Fall 1987 semester. Finally, FATE #3 contained all Associate in Arts degree graduates who successfully transferred to a state university and completed a baccalaureate degree or were registered for postbaccalaureate courses.

In addition to subdividing the 1980 graduates into three FATEs, the cross-matching of the Associate in Arts graduate data set with the SUS Student Data Course File. The final data set was then transferred from a mainframe environment into PC environment and subjected to further analysis.

Accumulation of Economic Data

Once the initial raw data from the participating community colleges had been subdivided into FATEs and had the SUS data appended to the subsamples, a second data collection was required. At this point in the data collection process, only demographic and educational data had been incorporated into the data set. Economic data on each individual graduate was available through a state funded program--The Occupational Identifier Project (OIP) of the Department of Education. The state Department of Labor Statistics, Unemployment Compensation Insurance data base was accessible through the OIP for educational research. Again using the graduates' social security numbers, additional data elements were appended to the

three FATE determined data sets. With the incorporation of the data elements from the OIP, all of the data needed for the quantitative components of the analysis were finally included in the three data sets. What still was lacking was the subjective evaluations of the graduates' employers concerning the value of the graduates' investment in their personal human capital. A systematic sample of approximately 200 graduates was drawn from each FATE for use in the rate of return calculations. For all other quantitative analyses the entire data set for each FATE was used.

Employer Interviews

Because the focus of the research was on the Associate in Arts graduates who were included in FATE #1 and because interviewing each employer of all 601 graduates in FATE #1 was not practical, it was necessary to draw a subsample from the graduates in FATE #1 for individual employer interviews. A subsample of individuals in FATE #1 was drawn in such a way as to provide a systematic sample equal to 5% of the total FATE #1 sample. This subsample was drawn from all FATE #1 graduates employed full-time or part-time during any of the five quarters included in the data set. The employers of the individuals selected in the FATE #1 subsample were interviewed by phone in order to assess both the employers' perceived value of an Associate in Arts degree within the context of a hiring decision and also the employers' subjective evaluation of the skills and

abilities that an Associate in Arts degree graduate brings into the workplace.

Analysis of the Data

As has been pointed out previously, the full measure of the economic and social value of education must include more information that just the amount of income graduates receive or the rate of return on an investment in education. Economic data can be used to estimate the total monetary returns to an individual or the society in which the individual lives; however, education can also act as a credential (Taubman and Wales, 1973) that provides additional opportunities or education can also instill in the individual, skills and personal qualities which are at best difficult to quantify.

Weisbrod (1964) pointed to several nonmonetary benefits which education can provide an individual. Among these advantages were (a) a financial option return which was primarily the option for gaining additional education, (b) an opportunity option which provided individuals a broader array of employment opportunities, and (c) a hedge against technological displacement of skills.

This analysis was designed to examine both the monetary and nonmonetary benefits accrued by community college graduates who secure an Associate in Arts degree. The analysis examined the returns to graduates on their investments in their own human capital within the context of Weisbrod's (1964) framework of benefits. Specifically

the analysis utilized both quantitative and qualitative methodologies to develop a portrait of the value of an Associate in Arts degree to a graduate who utilizes that degree within the employment market. Each technique was used to extract the greatest meaning from the available data and also provided a harmonious blend of information that improved the quality of the total analysis. This blending of analytical techniques also allowed for a closer alignment of the total benefits to Weisbrod's theoretical constructs. An overview of the total analysis and its alignment with Weisbrod's benefits appears in Table 1-2.

Direct financial returns. The method utilized for the rate of return analysis closely follows the three step analysis outlined by Psacharopoulos and Woodhall (1985) which is based on the technique developed by Hansen (1963). Psacharopoulos and Woodhall described the method used here as the "elaborate method". The authors explained that the first step is to develop an age-earnings profile for each educational level. This profile will usually "exhibit a saw tooth pattern making the rate of return estimation very sensitive, especially regarding the initial years after graduation" (p. 323). This is why Psacharopoulos and Woodhall (1985) recommend smoothing the data by using predicted values from a regression model developed from the raw data. The model ultimately used to smooth the yearly earnings for the age-earnings profile was:

$$Y_i = a + b_1(AGE) + b_2(t)^2.$$

Table 1-2

Overview of the Analysis

Weisbrod' Benefit	Analytical Technique
Analysis of Economic Value	
1. Increased direct economic returns.	(a) A comparison of the internal rate of return for all three FATES.
	(b) An ANOVA comparing the mean annual incomes of each FATE and an ANOVA comparing the mean annual incomes of each FATE within each SIC Division.
2. Increased financial option returns (options for further education or training).	An analysis of employer responses to a set of questions relating to available on-the-job training or educational opportunities.
3. Increased opportunity options (availability of other employment).	(a) Cross-tab and chi-square analysis of the distribution of graduates within each SIC Division for FATE #1 and FATE #3.
	(b) An analysis of the employer responses to a set of questions concerning the use of the Associate in Arts degree in hiring and promotion decisions.
4. Acts as a hedge against the displacement of skills due to technological change.	Analysis of employer responses to questions relating to the graduates' relative ability and willingness to learn new skills.
Analysis of Social Value	
1. Greater labor productivity.	ANOVA of the mean number of weeks employed within each FATE.
2. Increased tax base.	
3. Reduced need to incur costs.	

The second step following the smoothing of the data was to construct an idealized age-earnings profile using predicted values from the regression model. Finally, the predicted values are used to calculate the rate of return.

Mean annual incomes are utilized in a second way within the framework of the analysis. The graduates are disaggregated into SIC divisions and the incomes of the individuals in each FATE are compared by using a multiple regression analysis of variance. The specific SIC divisions appear in Table 1-3.

Financial options returns. These returns were primarily assessed by examining the availability of employer funded or sponsored educational or on-the-job training programs. These opportunities for further education were assessed by utilizing a questionnaire administered to a 5% sample of the employers of graduates in FATE #1. A copy of the survey instrument can be found in Appendix C. The responses were analyzed by clustering responses into subgroups and analyzing the relationship between clusters. Because all of the graduates are restricted by the same employment market pressures it is possible that differences in available opportunities for individuals with differing levels of education would be reflected in the distribution of individuals within the specific SIC divisions. A cross-tabulation and chi-square analysis were applied to the numbers of graduates in FATE #1 and FATE #3 in each SIC division. Second, each pair of

Table 1-3

Standard Industrial Classification Divisions

Division		Type of Industry (No. of Major Groups)
A.	0000-0999	Agriculture, Forestry and Fishing (5)
B.	1000-1499	Mining (4)
C.	1500-1799	Construction (3)
D.	2000-3999	Manufacturing (20)
E.	4000-4999	Transportation, Communication, Electric, Gas and Sanitary Services (10)
F.	5000-5199	Wholesale Trade (2)
G.	5200-5999	Retail Trade (8)
H.	6000-6799	Finance, Insurance, and Real Estate (7)
I.	7000-8999	Services (16)
J.	9100-9799	Public Administration (6)
K.	9900-9999	Nonclassifiable Establishments (1)

values in each division were compared with the total distribution of graduates in FATE #1 and FATE #3.

Opportunity options. These options relate to the availability of employment options to individuals who have different levels of education. A baccalaureate degree is a minimum entry requirement for many positions in the current job market. A recent Associate in Arts degree graduate with limited job experience would not be competing with baccalaureate degree graduates for jobs, they would be competing most frequently with high school graduates. Because of this competition, the questions concerning

hiring and promotion decisions in the employer interview are oriented towards a comparison of individuals in FATE #1 with individuals with only a high school degree. By examining the pattern(s) suggested by the employer responses to questions concerning the use of education in hiring and promotion decisions.

Hedge against technological change. Weisbrod (1964) pointed out that one of the direct benefits realized by the student is that

> Education may be viewed as a type of private (and social) hedge against technological displacement of skills . . . New technology often requires new skills and knowledge; and those persons having more education are likely to be in a position to adjust more easily than those with less education . . . [this hypothesis] suggests the following implication: the higher the level of an individual's formal education attainment, the more he can benefit from additional on-the-job training. (p. 23)

The critical factor in this instance is the generic nature of education and the ability to transfer learning skills and the willingness to learn to new settings, such as the work environment. Education should increase an individual's readiness to accept new knowledge, the student or recent graduate should be more willing and more capable of the intellectual retooling needed to prepare themselves for the use of new technology on the job or in an academic environment.

In order to assess the employers' recognition of the Associate in Arts degree graduates' abilities and willingness to continue to learn on the job, the employer

responses to a series questions within the interview were analyzed to determine the perceived value of additional education, and the organizational policies supporting additional education for employees. Because the questions are concerned with interactions between a graduate's willingness to learn and skill at learning, an initial conceptual framework in which the clustered data will be analyzed is provided in Figure 3-1. This framework is a logical extension of Weisbrod's view of education acting as a hedge against the "vicissitudes of technological change" (Weisbrod, 1964, p. 23).

Direct social benefits. One of the most prominent social benefits derived from investments in education, is the increase in productivity derived from increases in human capital (Weisbrod, 1964). Weisbrod defined increased productivity as "anything which increases production possibilities or anything which reduces the need to incur costs" (p. 17). Employment and unemployment are two sides of the same coin because both increased employment and decreased unemployment have the same net effect of increasing labor productivity and reducing costs to society respectively.

One of the data elements included in the information provided by the state Department of Labor Statistics database was the number of weeks worked per job per quarter for each individual in each of the three FATEs. If unemployment rates are inversely related to the educational

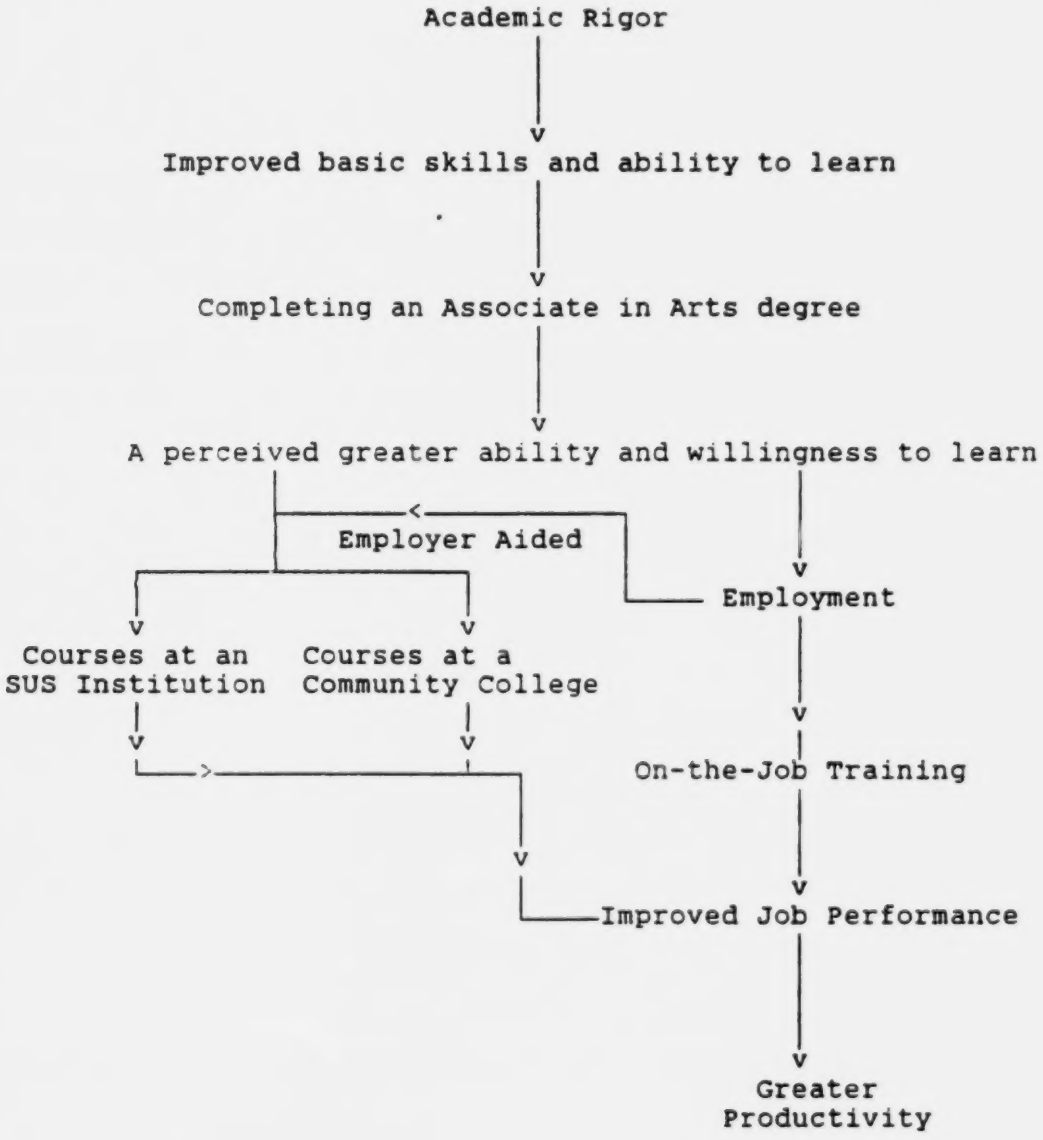

Figure 1-1. Proposed Conceptual Framework Based on Weisbrod's "Education as a Hedge Against Technological Displacement of Skills"

levels of workers, as has been proposed by a number of researchers (Ashenfelter & Ham, 1979; Nickell, 1979), then the mean number of weeks employed per quarter should increase as the total amount of education increases. In addition a lower level of unemployment would also imply a lower social cost to the community in which the individual is living. Productive individuals who work to support themselves and their families reduce the cost of social programs such as Unemployment Compensation, Welfare and Aid to Dependent Children by not needing this type of help.

CHAPTER II
RESULTS

Introduction

The primary purpose of this study was to identify and characterize a population of community college graduates who have been almost completely ignored by researchers who have evaluated the success of community college Associate in Arts degree programs. In addition to describing the demographic characteristics of this population of community college graduates, meaningful information was extracted from an extensive economic dataset by examining the relative value of each of three possible post-graduation paths (FATE #1, FATE #2, and FATE #3). The results of this investigation are presented in essentially the same order as they were collected. The demographic and educational data are presented first. The economic data follow and the results of the employer interviews are presented last.

Demographic Data

Table 2-1 contains a summary of the demographic data. It can be seen from these data that approximately 68% of the total graduating class transferred to one of the nine state universities All three FATE's reflect the trend towards larger numbers of female students who attended community colleges during the early 1980's. The only exception was that proportionately more males were in FATE #2 than in FATE #1 or FATE #3.

Table 2-1

Demographic Characteristics of the Recovered Sample

	FATE #1	FATE #2	FATE #3	
		Sex		
Male	241	261	338	
Female	358	233	435	
Not Reported	2	0	1	
Total	601	494	774	1869
		Race		
Caucasian	525	431	665	
Black	49	39	47	
Am Indian	2	2	0	
Asian	1	3	8	
Hispanic	20	15	33	
Not Reported	4	4	21	
Total	601	494	774	
		Employment		
Full-time	551	446	684	
Part-time	44	47	44	
More than one job	72	56	46	
Not Reported	6	1	0	
Total	601	494	774	

Racially, each of the three FATEs were proportionately very similar in the distribution of individuals within each ethnic group. The only notable feature of these data was the relatively large number of Asian baccalaureate graduates compared to Asian graduates who did not complete their baccalaureate degree program.

Although ages were not available for all graduates, the systematically selected subsamples used for calculating the rate of return, included ages for almost all individuals in each subsample. The distribution of ages within each FATE can be seen in Figure 2-1. Although over 65% of all graduates in each FATE were in the 25-30 year old group, the distributions of graduates' ages were similar for all three FATES. The only notable difference was the relatively higher proportion of older graduates (older than 46 years of age) in FATE #1 than in the other FATEs.

Direct Economic Returns

Rate of Return Calculations

In order to calculate the rate of return it was necessary to segregate individuals within each FATE into age categories and determine the mean income for each age group. These values were entered into the following regression model.

$$Y = a + b_1(age) + b_2(t)^2$$

Where

age = current age
t^2 = years in the workforce squared.

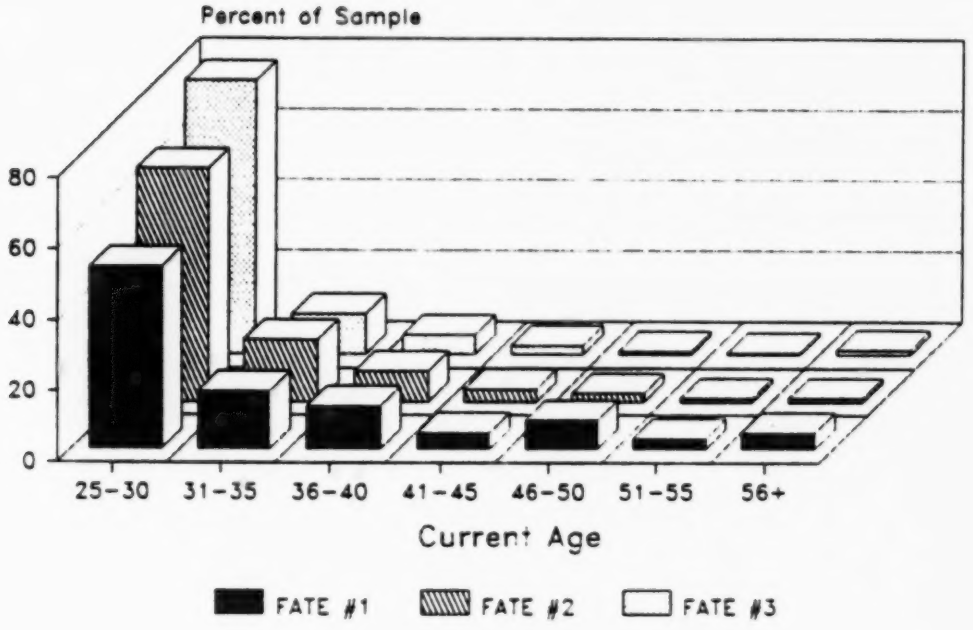

Figure 2-1. Age Distribution in Graduates Used for IRR Calculations.

This model is used for smoothing the raw earnings data and is described in Psacharopoulos and Woodhall (1985) as the "elaborate method" of calculating the rate of return. When the predicted mean income values are plotted an age-earnings profile is produced. The age-earnings profile for each FATE is displayed in Figure 2-2. The age-earnings profiles indicate that average incomes are surprisingly similar for the initial years in the job market but diverge in the later years. It should by noted that in FATE #2 the older age categories have very low numbers of individuals. The average income for the age group 46-50 in FATE #2 is disproportionately high because there were only three individuals within this category, and two of the

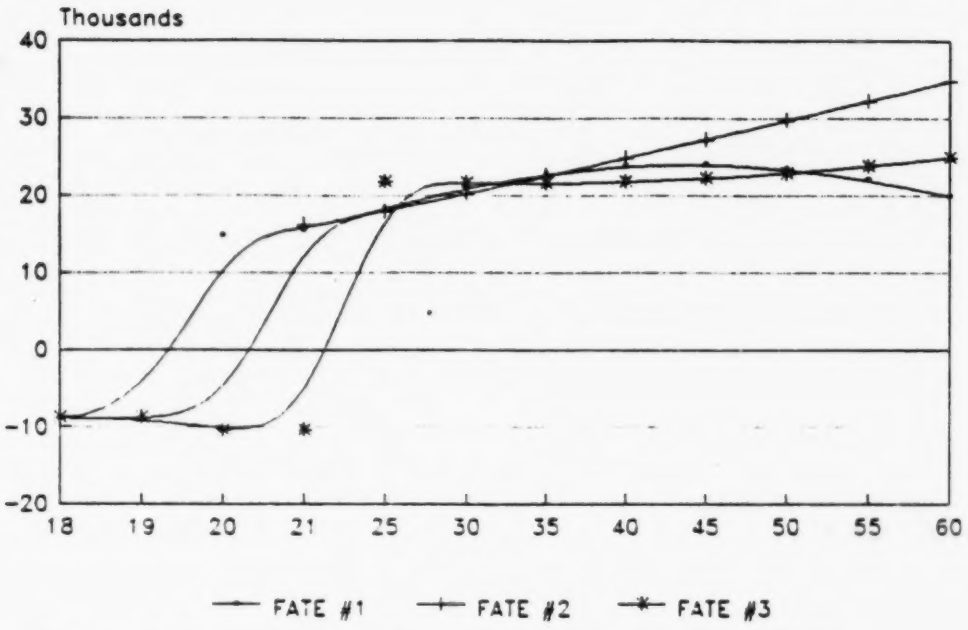

Figure 2-2. Age-earnings Profiles for All FATEs

three have relative high incomes compared to the mean income for all individuals in FATE #2. The results of the calculations of the differential rates of returns (see Table 2-3). Two different approaches to calculating an rate of return were completed in an attempt to examine more closely the contribution that education alone has on earnings. The alpha coefficient of 0.66 was used in an attempt to correct incomes for individual differences in abilities and more accurately estimate the actual amount of income directly attributed to education as suggested by Blaug (1970). Differential rate of return comparing individuals in FATE #1 and FATE #2 yield an rate of return between 0.9% and -0.3% and the comparison of FATE #1 and FATE #3 yield a rate of return between -5.8% and -6.2%.

Table 2-2

Differential Rates of Return

	FATE #2 / FATE #1	FATE #3 / FATE #1
Regression Model with only Incomes	0.9%	-5.8%
Regression Model with corrected Incomes(alpha=.66)	-0.3%	-6.2%
n = 572		

The negative values indicate that the rates of return to those individuals in FATE #1 was greater that the rate of return to graduates in the other FATE with which the individuals in FATE #1 were being compared.

Income Analyses

Table 2-4 contains a list of the mean annual earnings of all individuals in each FATE as well as the disaggregated mean annual earnings of all individuals in each SIC Division. The results of an analysis of variance for the aggregate means for each FATE indicated that there was a significant difference between FATE's. Posthoc comparisons of the individual pairs of aggregate means using Bonferroni's t yielded a significant t statistic only for the comparison of FATE #2 and FATE #3 (see Table 2-5). The analysis of variance for each of the SIC Divisions yielded significant F statistics only for the Retail Division, General Service Division, and the Public

Table 2-3

Mean Yearly Incomes for each SIC Major Division

	FATE #1	FATE #2	FATE #3	F = F_{crit}=2.99
Agriculture	$22,024	$16,608	$23,972	
Construct.	$19,512	$19,075	$20,902	0.33
Manufact.	$25,213	$25,759	$26,090	0.08
Transport.	$28,085	$22,519	$23,393	2.41
Wholesale	$25,713	$23,645	$20,737	0.96
Retail	$16,651	$17,993	$22,087	4.27*
Financial Services	$19,786	$20,693	$22,073	0.89
Services	$19,579	$17,764	$21,487	9.91*
Public Adm	$25,315	$21,126	$21,547	4.05**
Total	$21,218	$19,845	$22,173	7.00*
Std. Dev.	$10,565	$10,429	$10,247	

* = sig. dif. (p =.05) FATE #3 > FATE #1
** = sig. dif. (p =.05) FATE #1 > FATE #3

Table 2-4

Bonferonni's t Values For Divisions With Significant Income Differences

	FATE #1/ FATE #2	FATE #1/FATE #3	FATE #2/FATE #3
Aggregate Means	1.34	2.13	6.98*
Retail	0.24	3.93*	2.21
Gen. Services	1.86	3.27*	9.16*
Public Adm.	2.86*	3.00*	0.03

Bonferonni's t_{crit}= 2.43

Administration Division. Further analysis using Bonferroni's t indicated that significant differences existed between the mean annual earnings in FATE #1 and FATE #3 for all three Divisions and a significant difference exists between the mean annual earnings in FATE #2 and FATE #3 for the General Service Division. It should be noted that yearly earnings for individuals in FATE #3 were significantly greater than for individuals in FATE #1 in the Retail Division and the General Service Division, however, the reverse is true for the Public Administration Division where the mean yearly earnings for individuals in FATE #1 was significantly greater than the mean yearly earnings for individuals in FATE #3. All of the remaining five SIC Divisions indicated that there were no significant differences between the mean annual incomes of all three FATEs for each Division. The Agriculture Division was not compared using posthoc treatments due to the low number of individuals in FATE #1 and FATE #3 (see Table 2-4).

Distribution of Graduates within SIC Divisions

Table 2-6 is a contingency table comparing the distribution of individuals within the SIC Divisions for FATE #1 and FATE #3. The significant overall chi-square statistic indicated that there was a significant difference in the distribution of individuals within the two FATE's relative to the total sample. A more detailed examination of the data through the calculation of chi-square statistic for each row indicated that only the distribution within

Table 2-5

Analysis of the Distribution of Individuals Employed in Each SIC Division

SIC Div.	FATE #1 No./ %Row	FATE #3 No./ %Row	Total	Chi-square per row
Agriculture	4 /33.3%	8 /66.7%	12	0.338
Construction	23 /47.9%	25 /52.1%	48	0.780
Manufacturing	55 /41.7%	77 /58.3%	132	0.000
Transport.	38 /51.4%	36 /48.6%	74	2.896
Wholesale	27 /47.4%	30 /52.6%	57	0.780
Retail	74 /50.0%	75 /50.0%	149	3.989*
Fin Serv	50 /33.8%	98 /66.2%	148	3.722
Service	216 /38.0%	353 /62.0%	569	3.101
Public Adm	55 /48.8%	58 /51.3%	113	2.327
Total	542	760	1302	

Overall Chi-square = 17.937* (df = 8)

* = significant difference (p=.05)

the Retail division was significantly different from the expected distribution.

Table 2-7 lists the distribution of graduates in FATE #1 and FATE #3 in the Major Groups associated with the Retail, General Services and Public Administration SIC Divisions.

Employer Interviews

The employer interviews were used primarily to determine the potential benefits associated with or the credential value of an Associate in Arts degree in the

Table 2-6

Distribution of Graduates within the Major Groups Included in the Retail, Service, and Public Administration SIC Divisions.

Division	Major Groups	FATE #1	FATE #3
Retail			
	Building materials, hardware, garden supply, and mobile home dealers	4	5
	General merchandise stores	11	19
	Food stores	15	4
	Automotive dealers and service stations	8	4
	Apparel and accessory stores	4	7
	Home furniture, furnishings, and equipment	8	7
	Eating and drinking places	14	20
	Total	74	75
General Services			
	Hotels and lodging facilities	7	4
	Personal services	0	0
	Business services	26	48
	Automotive repair and parking	5	2
	Misc. repair services	1	1
	Amusement and recreational services	6	6
	Motion pictures	1	1
	Health services	106	65
	Legal services	3	15
	Educational services	39	152
	Social services	10	15
	Museums, art galleries, and botanical gardens	0	1
	Membership organizations	4	2
	Engineering, accounting, research, management, and related services	0	0
	Miscellaneous Services	8	41
	Total	221	356
Public Administration			
	Executive, legislative, and general government	37	24
	Justice, public order, and safety	10	17
	Public finance, taxation, and monetary policy	3	1
	Administration of human resource programs	3	13
	Administration of environmental quality and housing programs	1	2
	Administration of economic programs	1	1
	National security and international affairs	0	0
	Total	55	58

workplace. The focus of the interviews was on the use of the Associate in Arts degree during the hiring process and after hiring for training or promotion decisions. Each employer was initially contacted by a letter addressed to the Director of Personnel (Appendix A). Following the letter a follow-up phone call was placed to the Director of Personnel or the person who makes the final hiring decisions in the smaller organizations. A general explanation of the project was offered to the employer followed by a request for an interview. If an interview was granted, the employer was asked for permission to tape record the interview. Four employers contacted refused to grant an interview. Two other employers were contacted but after arranging a time for a second contact, they avoided the interviewer or blocked the calls on at least three separate occasions. Finally, four employers in the sample could not be contacted because they had no phone number listed in the area code that was supplied by the Department of Labor Statistics Unemployment Compensation Insurance database or the company had gone out of business. This means that twenty-three employers were interviewed or approximately 70% of the original sample. Because of the extensive nature of interview responses, a summary of the comments is offered here. All responses cited are direct quotations from the transcribed tapes of the interviews.

Question 1. Do you have any idea of how many employees in your organization have Associate in Arts degrees?

Yes = 6 No = 15

The vast majority of employers did not know the educational status of their employees. Indeed, they not only did not know, they could not gain access to the information without manually going through the personnel files. Several organizations had employee records in an electronic form, but the information was not readily retrievable. Of the employers who hesitantly ventured an estimate or actually knew how many employees had Associate in Arts degrees, the majority emphatically stated that the number stated was just an estimate, an accurate tabulation would require many man-hours.

Question 2. Does your organization have any positions which specifically require a minimum of an Associate in Arts degree.

There was only one employer who had positions which required an Associate in Arts degree. That employer insisted that one accounting position required an Associate in Arts degree, however, responses to other questions indicated that there was some confusion in the interviewee's mind about the differences between an Associate in Arts and an Associate in Science degree. Many employers do, however, use education as an important component of the hiring decision or allow education to be substituted for experience. Because of this the responses were clustered and coded into the following categories:

	No. of Responses
Absolutely no positions	= 10
An AA used as substitute for experience	= 7
Exerts an influence on hiring	= 5
Associate in Arts required	= 1

The employers that had no positions which required an Associate in Arts degree usually utilized other criteria for making hiring decisions. Such criteria as previous experience and external licensing requirements were used in lieu of education. Of the employers who stated that education can be substituted for experience, many followed some type of formula whereas others simply counted years of education as substituting for years of experience on a one-to-one basis.

To follow up on the second question the third question centered on the specific use of the Associate in Arts degree in hiring decisions.

Question 3. How does your organization use an individual's education, specifically the Asscciate in Arts degree in hiring decisions?

Some organizations used education as a significant component in a hiring decision and others do not. The organizations that recognize the Associate in Arts degree in hiring decisions were usually relatively large bureaucracies within the public sector. The large bureaucracies typically have stringent guidelines and specific written criteria for each job. The hiring process is also one of distinct steps which must be universally adhered to for all positions and all candidates.

Question 4. How does this organization use an individual's education to determine starting salary?

Once a hiring decision was made, the next potential use of educational credentials was in the determination of the starting salary. Almost all organizations in the private sector did not consider education in salary determinations. It was only an indirect relationship. The vast majority of private organizations had a set salary for each position and only modified this salary for exceptional credentials or several years experience in the same general job field. Public sector organizations restated that generally starting salaries were based on a formula of entry-level salary plus years of experience. Since education in many instances substituted for experience, this would then affect the starting salary. As an example one employer pointed out

> It would only be considered a plus if a person had more skills, however, it is not a requirement to have an AA degree. So it would only be looked at during the hiring decision and it would have an additional impact in the interview. It has no specific impact on starting salary, however it would have an impact due to the "incentive program". Are you aware of the incentive program? Any law enforcement officer [or fire fighter] in the state is eligible to receive an additional $30/month if they have either an AA or AS degree. This is provided under state law, Chapter 943 of the Florida Statutes, and they specifically provide for the salary incentive program.

The respondent contended that, in the public sector, education, specifically an Associate in Arts degree, was recognized as having a positive value for public employees

in the state because the state statute encourages police officers and fire fighters to pursue additional education.

Question 5. Does your organization have any on-the-job training programs?

This question apparently conjured multiple images in the minds of different individuals. Some employers considered the initial job specific training that a new employee receives as on-the-job training. Other employers envisioned any type of seminar, short-course participation, or any type of on-site program as on-the-job training. The responses were clustered into four groups based on the types of on-the-job training that was described.

	No. of Responses
None	= 7
Yes, but as seminars, continuing ed, or short-term courses	= 5
Yes, but limited to entry-level training	= 5
Yes	= 3

Although the majority of employers have some type of self-described on-the-job training program, in most programs education was primarily used to determine who enters a specific program but only through its influence on the initial hiring decision. Once an individual is employed, education is used in the public sector as an initial screening tool, or more frequently job performance and supervisor perceptions were found to be the primary factors determining the availability of advancement opportunities in both the public and private sectors.

Question 6. How does your organization encourage employees without a baccalaureate degree to pursue further education?

The most remarkable feature of the responses to this question was that only one organization, a small business owner, absolutely did not make any provisions for employees to further their education. All of the remaining respondents indicated some type of encouragement including the cluster called "lip service." This cluster was composed of two employers who stated that it was certainly a good idea for the employee to pursue further education, and it would be looked upon favorably, however, it must be on the employee's own time. In other cases opportunities were available for specific types of employees and not for others. In particular, hospitals encourage employees to become nurses but are less encouraging for other workers and other goals. In addition, a county school board reimbursed teaching employees for their educational expenses but not non-teaching employees. Other than in these few instances, all other employers had some type of established policy or assistance program for all employees seeking to further their education. In several cases, specific rewards were provided by the employer through direct salary increases or an increased availability of advancement opportunities following the completion of additional education. Prompts concerning the availability of tuition reimbursement, book reimbursement, and special considerations for scheduling around classes were frequently used to supplement the initial question.

Responses	Cluster	Group
5	Communication	Academic Skills = 7
2	Math skills	
4	Higher motivation, Accomplishment	Maturity= 13 Factors
1	Thinking processes, Maturity	
3	Organizational processes	
5	Ability to learn	
2	No difference	
1	Did not know	

Figure 2-3. Clusters and Groups used to Analyze Responses to Question #8.

Question 7. What skills and abilities do you perceive that an individual with an Associate in Arts degree brings into the workplace?

As would be expected, responses to such an open-ended question fell into a wide variety of clusters. Individual clusters used for analysis and the number of responses in each cluster can be found in Figure 2-3. The clusters of responses which attempted to distinguish between a high school graduate and a Associate in Arts degree graduate also could be aggregated into larger groupings. These larger categories reflected a concentration primarily on increased academic skills or increased maturity factors. The academic skills were principally communication skills such as writing, speaking, or listening skills, or more specifically, following instructions. Several employers mentioned improved math skills. They cited examples of primarily computational skills with little emphasis on higher level skills such as algebra.

The maturity factors were a more diffuse aggregation of clusters. Many employers mentioned or alluded to specific

individual personality characteristics which could be associated with maturity gained only though experiential learning. Some employers actually used the phrase "more mature" or "greater maturity." Others only suggested actions which could be used to characterize a mature individual. Examples of such actions would be someone who was highly motivated, had good organizational skills, were goal-oriented, or had a demonstrated commitment to learning and could learn new tasks readily. Only two employers could not identify any characteristics of Associate in Arts graduates that would separate them from a high school graduate. One employer could not answer any way other than "I don't know, I really just couldn't say."

Question 8. If an individual is hired with a high school diploma and while employed by your organization they complete their Associate in Arts degree, would they automatically get a raise or any other consideration as a result of graduation?

The responses were disproportionately weighted (16/23) in favor of little or no consideration provided to graduates. Indeed many of the employers stressed that job performance and supervisor perceptions were much more important than education once an individual has been hired. Among the employers who do reward graduates, one organization offers employees a specific raise for completing an Associate in Arts degree. Others cite that a greater array of potential positions are available due to a change in the individual's educational accomplishments.

Table 2-7

Comparison of Mean Number of Weeks Worked by Each FATE

	Weeks Worked During Five Quarters	Weeks Worked During Standardized Year
FATE #1	54.10	46.92
FATE #2	54.32	47.09
FATE #3	52.92	47.48
	F = 0.696	F = 0.257
	df=2,1782	F_{crit}=2.99

Analysis of Amount of Time Employed

The time employed within each FATE was used as a measure of one facet of the spill-over benefits to society of an employed work force. A 3X1 ANOVA comparing the mean number of weeks worked by each set of graduates over a five quarter period and for a standardized year were prepared. Both part-time and full-time workers were included. Graduates who had more than one job per quarter had the weeks worked on the second job included in the total weeks worked. The total number of weeks worked were compared and the results appear in Table 2-8. In order to standardize for individuals who worked for less than all five quarters, the total number of weeks worked by each graduate was calculated as a quarterly average and this quarterly average was extrapolated into a standardized yearly total. The comparison of the standardized yearly mean number of

weeks employed by each FATE can be found in Table 2-8. There were no significant differences found among the mean number of weeks employed in both determinations.

CHAPTER III
DISCUSSION

Introduction

Weisbrod (1964) established a framework within which the benefits of acquiring differing levels of education could be analyzed. Weisbrod viewed a benefit as "anything that pushes outward the utility possibility function for the society" (p. 17). The "utility possibility function" can be further segregated into two distinct categories. First, the benefits realized by the student and, secondly, the benefits available to society in general. These benefits were summarized in Table 1-2 (pg. 13). This study was designed to evaluate the relative value of an Associate in Arts degree to graduates who did not pursue further education (FATE #1) in light of Weisbrod's proposed benefits of additional education. Within Weisbrod's propositions is the underlying assumption that additional education will allow an individual and society to reap additional benefits. If groups of individuals with differing levels of education are compared, the benefits received by each group should differ in a direct relationship with the total amount of education completed. These differences should be reflected in an increase in total annual earnings, the available educational options, the available opportunity options, and the available training options as well as an increase in the social value of additional education thorough an increase in labor

productivity, a reduced need to incur costs and an increase in the general community welfare.

Overview

This analysis focuses on the individuals within FATE #1 and the value, both economic and perceived, of the Associate in Arts degree in within the context of Weisbrod's potential benefits. From the employer interviews it was apparent that the Associate in Arts degree potentially was valuable at two distinct points in an individual's career. The first point at which an Associate in Arts degree graduate could gain an advantage over a high school graduate was during the initial hiring process. It could be used as a credential that provides the Associate in Arts degree graduate access to a specific array of potential positions. The second point at which the degree could be utilized occurs after the initial hiring decision. This second use would be to aid the graduate in gaining access to additional training or advancing to a position of greater responsibility. Both potential uses would fall within the range of the Opportunity and Financial Options that were outlined by Weisbrod. It was assumed that positions of increased responsibility would remunerate the graduate at an increased level thus increasing both the individual's productivity and the direct financial return simultaneously.

Two caveats are proffered prior to the discussion of the data. It should be remembered that the data were collected only eight years following graduation with an Associate in Arts degree. The results of this study could be very different if these individuals were examined again at 15 or 20 years following graduation instead of only eight years after graduation.

The second caveat is that the data set is limited to only community college graduates. When the term "baccalaureate degree graduate" is used, it is meant to describe only that component of the original set of Associate in Arts degree graduates who have completed a baccalaureate degree (FATE #3). The results of this study should not be extrapolated to all baccalaureate degree graduates nor should it be extrapolated to any community college graduates other than ones in the population from which these data were extracted.

Direct Benefits to the Student

Direct Financial Returns.

The direct financial returns to the graduates were measured by examining the rate of return on the investment in education and also comparing the 1987-88 mean annual earnings of graduates within all three FATEs. The negative rate of return when comparing the graduates in FATE #3 and FATE #1 (-5.8% with no correction and -6.2% using the alpha coefficient) was surprising but not completely unexpected. The presence of the negative value for the rate of return

in this study was an indication that FATE #1 had a greater return on the graduate's investments in education than the individuals within FATE #3. Almost all other studies which calculated rates of return on the value of a baccalaureate degree as compared to a high school diploma indicated that the results usually were in the range of 8% to 18% (see Table 3-1). Blair, Finn, and Stevenson (1981) examined the earnings of Associate in Science degree graduates after 10 years, 20 years, and 35 years following graduation. Their results indicated that the Associate in Science degree graduates experienced a rate of return of 8.2% to 14.9% with the rates of return increasing over time.

Even when the rate of return was calculated using the alpha coefficient of 0.66, the rate of return was -6.2%. The alpha coefficient is a mathematical correction used in an attempt to estimate that portion of the total differences in incomes which is a direct result of education, not some other uncontrolled characteristic of the population.

The greater rate of return for individuals in FATE #1 could very well be a reflection of the relatively long period, approximately eight years, that the graduates in FATE #1 have been in the employment market as contrasted to the three to four years that the individuals in FATE #3 have been in the job market. Judd (1988), using the same data set, found that the majority of Associate in Arts degree graduates in FATE #3 completed with their

Table 3-1

Comparison of Rates of Return in Previous Studies

Year	Author(s)	Level	Data Source	Dependent Variable	Private IRR(%)	Social IRR(%)
1975	Becker	HS Col.	1939,1949 Census	Earnings	10.0	13.0
1981	Blair, Finn & Stevenson	HS,AS, 1yr of Col.	1972 Manpower Survey	Earnings 10yrs 20yrs 35yrs	8.2 13.9 14.9	
1975	Carnoy & Marenbach	E,HS Col.	1939,1949 1959,1969 Census	Annual Income & Earnings	14.3	9.3
1973	Eckaus	E,Col.	1959 White Males 14-64 Census	Hourly Wage	11.5	
1975	Freeman	HS, Col.	1959,1969 1972,1974 Census,CPS	Annual Earnings	10.4	9.7
1967	Hanoch	HS, Col.	1959 males Census	Annual Earnings	10.0	
1963	Hansen	E,HS Col.	1949 males Census	Income	10.1	10.2
1982	McMahon & Wagner	Col.	1976 B.A. graduates	Annual Earnings	18.0	13.3
1962	Mincer	Col.	1950 Census	Pre-tax income	11.0	13.0
1975	Raymond & Sesnowitz	Col.	1969 Census	Annual Income	15.7	14.3
1973	Taubman & Wales	HS, Col.	1955,1969 Male air cadets	Pre-tax monthly earnings	9.0	8.0

Abbreviations: E = elementary school, HS = high school
AS = technical Associate degree
Col. = college graduates
CPS = current population surveys

baccalaureate degree between 1982 and 1984. This would mean that these graduates would have been in the job market for a much shorter period of time than the graduates in FATE #1. This would mean that the accrued incremental raises received by workers in FATE #1 would have neutralized any potential financial advantage gained by individuals in FATE #3 due to a higher starting salary for baccalaureate degree graduates.

An equally plausible explanation would be that the graduates in FATE #3 have been burdened by an additional two years of costs at a university. The difference in initial costs should be made up by the deferred earnings that would be received by individuals in FATE #3. It is quite possible that these deferred earnings have not yet exerted a significant influence on the graduates' annual earnings and therefore have had little effect on the rates of return. In another five or ten years the relative rates of return could be very different than they were in this analysis.

The rates of return have been primarily used in studies designed to be cost-benefit analyses (see Table 3-1). These studies frequently compared investments in education with alternative investments. Although this use of the rate of return on investments completely ignored any type of nonpecuniary value offered by investments in education, it is still a useful measure of the return to the investor on investments in education. Leslie and

Brinkman (1986) pointed out that "most analysts select a 10% social and private IRR as suitable for the degree of risk represented by investment in education" (p. 210). If this value is used to compare an investment for individuals in FATE #1 with investments made by graduates in FATE #2 and FATE #3, neither IRR value calculated would seem to offer a substantially greater return on an investment in education than on comparable alternative investments. Fortunately, this is not the only standard used to judge the direct financial return of an Associate in Arts degree to those graduates within the sample being evaluated.

The second measure of the direct financial return to Associate in Arts degree graduates was a direct comparison of the aggregate mean yearly incomes for all individuals in all three FATES. In addition to the aggregate mean yearly incomes of Associate in Arts degree graduates, a disaggregated comparison was also made subdividing each group of graduates into the specific SIC divisions (see Table 1-3, pg. 15). Table 2-4 (pg. 26) contains a summary of the analysis of the mean annual earnings of graduates in all three FATEs in eight of the nine SIC divisions. As important as the significant values are within the confines of the study, it should also be pointed out that the nonsignificant values stand out as being extremely valuable in the total evaluation of the data. It should be noted that even though there was a significant difference between the aggregate mean annual earnings for graduates in all

three divisions, subsequent posthoc tests indicate that the reason for the significant difference between the aggregate means is not a difference between FATE #1 and FATE #3 as would be predicted by Weisbrod, but the significantly different value was the comparison of mean annual earnings for FATE #2 and FATE #3 (see Table 2-5, pg 26). The mean annual earnings for FATE #2 was significantly lower than FATE #3 but not FATE #1. This finding would indirectly support the rate of return values because if there was no difference between the mean annual earnings for FATE #1 and FATE #3, then the additional costs of the upper-division university work would overwhelm any potential additional earnings derived by members of FATE #3 when they were employed at higher initial salaries but several years after the graduates in FATE #1 entered the job market. These data suggest that the lack of significance between the salaries of individuals in FATE #1 and FATE #3 indicates that there was little, if any, initial financial advantage to the graduates in FATE #3 for pursuing additional education when being compared to graduates in FATE #1 who have been working, gaining experience, and job specific skills which were rewarded with incremental salary increases while the individuals in FATE #3 were still pursuing additional schooling and incurring additional costs.

By disaggregating the earnings into the separate SIC divisions and comparing the mean annual earnings of

individuals in all three FATEs it was possible to isolate the differential earnings in an attempt to define which specific job categories were most favorable to the individuals in all three FATEs. There were no significant differences found between the three FATEs in five of the eight SIC divisions (see Table 2-4). No statistically significant differences were observed between the three FATEs in the Construction, Manufacturing, Transportation, Wholesale and Financial Services divisions. Within the Retail and General Services divisions there were significant differences between the individuals in all three FATEs. Further analysis using Bonferroni's t statistic (see Table 2-5, pg. 26) indicates that significant differences existed only between FATE #1 and FATE #3 in the Retail division and significant differences existed between FATE #1 and FATE #3 as well as between FATE #2 and FATE #3 in the General Services division. In the Public Administration Division a significant difference existed between FATE #1 and FATE #3, however, the difference was in favor of the individuals in FATE #1. This relationship between FATE #1 and FATE #3 was contrary to Weisbrod's theoretical framework. The major groups associated with the Retail, General Service and Public Administration Divisions are listed in Table 2-7 (pg. 29).

A further investigation of the distribution of graduates within each of the major groups in each SIC division in which there was a significant difference

between the mean annual earnings in FATE #1 and FATE #3 revealed that the majority of graduates were in only two or three of the major groups within the General Services and Public Administration Divisions (see Table 2-7). This would be a reflection of the job opportunities available in the local employment markets. In the General Services division over two-thirds of the graduates employed in this division were employed in the Health Services, Educational Services, Legal Services and Social Services. These four areas would place a hiring emphasis on not only entry-level employees with a baccalaureate degree but also many would insist upon post-baccalaureate credentials from specific job categories. It was not surprising, therefore, to find that the mean annual earnings of the graduates in FATE #3 exceeded that of graduates in FATE #1.

In the Retail division there was a relatively even distribution of graduates within six of the eight Major Groups within this division. The interview process revealed that most employers in the private sector have minimum educational requirements for most entry-level management positions as either a baccalaureate degree or, in a few cases, they required "some college" and a specific number of years of experience in that business field. Therefore, it is highly probable that within the Retail division, individuals applying for entry-level management positions are screened by the preferential hiring of baccalaureate degree graduates in these higher paying

entry-level positions. Again, the Retail and General Services divisions conform closely to generally accepted maxim within human capital theory literature that there is a direct relationship between investments in human capital in the form of education, and the returns to the individual in the form of income opportunities and advancement potential.

In the Public Administration Division the relationship between education and income was distinctly different. Within this division the vast majority of graduates were concentrated within the executive, legislative and general government (local, county and state) and in the justice, public order, and safety major groups. These major groups include civil servants at all levels of the government and in particular police and fire employees. Out of the 23 employers contacted during the interview process five of the graduates were employed with municipal police and fire departments or for state agencies. From the employer interviews it was determined that an Associate in Arts degree was recognized and included as a significant component of the initial hiring decision, especially of youthful applicants with little work experience. In addition, the Associate in Arts degree (or an Associate in Science degree) provides, under Florida Statute 943.22, an additional salary incentive which is added monthly to the earnings of police or fire employees who have completed this level of education. This same state statute also

provides for an additional monies to all police and fire employees who complete a baccalaureate degree. Interviewees all agreed that, by far, the most common credential among "uniformed personnel" was an associate degree. None of the interviewees knew how many individuals in their employ had each type of associate degree. This salary incentive, however, does not fully account for the $3768 difference in mean annual earnings that were observed between the individuals in FATE #1 and FATE #3 in the Public Administration Division. This additional salary differential could be accounted for by the additional incremental wage increases the individuals in FATE #1 accrued during the 3-4 years individuals in FATE #3 were making additional investments in education. Another influencing factor could also be an ancillary benefit from entering the work force earlier, that is, taking advancement tests earlier than the individuals in FATE #3. One employer stated during the interview

> There are positions which would give you a preference or would give you years off of time in grade if you had an AA degree. For instance, if you had an associate's degree and you wanted to go from police officer to sergeant, you would have to wait three years to take the test, if not, you would have to wait five years in grade to take the test. In most all positions, the AA degree or two years of college can be substituted for two years of experience. Since most of our promotional opportunities are filled by the use of a written exam, we feel that having two years of college or an AA degree should give them an edge in taking this written exam.

If this type of advancement policy is relatively widespread in local police and fire departments, and certainly some

type of objective evaluation is common within most components of the public sector (see Applicant Selection Guide, Appendix B), then individuals in FATE #1 not only were gaining income by incremental raises, but also they had an advantage over FATE #3 graduates by qualifying to compete for advancement opportunities earlier. The combination of these two factors could account for a significant difference between the mean annual earnings of individuals in FATE #3 and FATE #1 within the Public Administration Division.

In summary, it would appear that eight years after graduation, the direct financial returns for individuals within FATE #1 and FATE #3 were overall remarkably similar in most SIC divisions except General Service, Retail and Public Administration. This assertion was further supported by the relatively low and negative rate of return on the investment made in education even when using an alpha coefficient. The lack of significant differences between the aggregate mean annual earnings of graduates in FATE #1 and FATE #3 and the lack of significant differences between the disaggregated mean annual earnings of graduates in five of the eight SIC divisions also lends credence to the assertion that the direct financial returns are more beneficial to individuals in FATE #1 in the public sector and not significantly different within a majority of the other SIC divisions.

These findings also point to specific portions of the job market, such as the General Services and the Retail Divisions, in which additional investments in education can reap additional direct financial returns. These additional returns are significantly different from returns to individuals with less invested in education. In contrast is the Public Administration Division, in which individuals with less invested in education (FATE #1) had significantly greater mean annual earnings than did individuals in FATE #3. The differences in the Public Administration Division would seem to be closely related to the relatively objective and seniority oriented, hiring and promotion practices which are mandated within large segments of the public sector and incremental annual increases in income.

Financial Option Returns

The financial option returns as defined by Weisbrod (1964) includes the opportunity to obtain still further education or on-the-job training and the rewards which accompany any addition to an individual's reservoir of human capital. In lieu of attempting to quantify these options, a qualitative assessment was used to determine the extent of the availability of employer supported programs which were designed to encourage employees to pursue further education. All employers but one, in responding to Question #6 on the Employer Interview, indicated that there was some type of formal or informal policy which assists employees who want to pursue additional education. The

type of benefit available and the restrictions or limitations placed on the benefits varied dramatically from employer to employer, however, almost all employers agreed that additional education beyond high school would be viewed positively and course work which is relevant to the individual's specific job or even course work that is peripherally related to the business would be more readily encouraged than non-business related course work. As an example almost all hospitals had specially funded programs available to employees which not only encourage employees to pursue further education, but for employees interested in the nursing profession, an area of critical need, most of these policies were extremely liberal. Almost all hospitals had programs designed to encourage employees to go into nursing or some type of health-related degree program, however, the same liberal options would not necessarily be offered to a business office employee wanting to pursue a business degree. This type of nonnursing educational program would have to be evaluated on a case by case basis before support was offered.

> Yes, most definitely. We have a very good tuition reimbursement program. We have about 250 employees receiving tuition reimbursements. A large number of them are taking courses at the associate degree level the next greatest percentage at the baccalaureate and fewer yet at the master degree level. You have to have worked for _____ at least 6 months as a regular employee. Then you are eligible for tuition reimbursement. If you are a full time employee you are eligible for up to $1000 per year, and if you want to become a registered nurse you are eligible for up to $2000 per year. We will cover the costs of tuition, books, lab and library fees. If you are a part-time

employee is eligible for up to $500 per year or $1500 for a nursing program.

The public sector employers, with one exception, were also very liberal in the course work supported by their educational plans. All employers encouraged courses leading to a baccalaureate degree and many even encouraged post-baccalaureate work. All state employees are allowed, by state statute, to take six credit hours of course work at any state funded college or university without charge. In addition, one state agency even provides for paid educational leaves for employees pursuing specific degree programs.

> Well we have two things we do. We take advantage of the six credit hours free tuition credit at the state universities and _____ has a special program which begins after the AA degree in the junior year. We will approve a year's leave of absence with pay and maybe for even a senior year, especially in areas where _____ needs specific expertise. These areas would be real estate, engineering, data processing and maybe even accounting. So we will pay the employee full salary, but the employee will have to pay their own tuition. I think that this is a unique program.

Although many employers would assist employees to pursue specific job-related academic programs, it was clear from the responses that the while most employers encourage employees to pursue an associate degree or a baccalaureate degree, many employers were hesitant to fund post-baccalaureate programs except where the benefits would directly profit the employer as well as the graduate. One public sector employer expressed reservations about funding graduate level courses. The general feeling was that since the public sector pays so much less than the private

sector, anyone pursuing advanced degrees would leave the public sector for a better paying job after the public sector employer helped pay for the education. The employer interviewed explained that this was currently a very sensitive issue because the employer had just had several employees do this recently. Because of the hesitancy to fund advanced training and because many employers, such as hospitals, want employees to gain job-related skills which are available at either local community colleges or state universities at the associate and baccalaureate level, individuals with less than a baccalaureate degree find an extremely fertile environment for taking advantage of the available educational benefits offered by employers. Weisbrod (1964) stated that the value of a financial option for additional education or training is the product of the probability of exercising the option and the expected value if the option is exercised. With this relationship in mind, it would appear from the limited data collected, individuals with less than a baccalaureate degree have a much greater potential for exercising the option (as evidenced by more individuals being funded at this level), even though the expected returns would be less than those expected for a baccalaureate graduate pursuing advanced training. Even if the rewards were less, the greater potential for exercising this option would offset any additional financial advantage to graduates in FATE #3 and would provide graduates in FATE #1 and FATE #2 with a

greater financial option return than graduates in FATE #3 who would have a much lower probability for exercising the education option. This was best exemplified by the program for a paid two year educational leave that was available to associate degree graduates and would not have been available to individuals in FATE #3 employed by the same state agency.

Opportunity Option Returns

Opportunity option returns were described by Weisbrod (1964) as providing a broadening of the nonmonetary individual employment options "the value of education is a function of the additional options which become available after having it--job options and income-leisure-security options" (p. 22). If there were differences in the potential array of job options that are available to individuals with different levels of education, then there should be a difference in the distribution of graduates within the nine SIC Divisions when comparing the individuals in FATES #1 and #3.

Table 2-6 (pg. 28) contains a contingency table which compares the distribution of individuals within FATE #1 and FATE #3 within all nine SIC divisions. The chi-square value of 17.937 indicates that there was a significant difference in the distribution of graduates within the SIC divisions. Subsequent chi-square statistics comparing the numbers of individuals in each FATE with the number of individuals that would be expected based on the total size

of each FATE, indicated that it was only within the Retail Division was there any significant difference in distribution.

The Retail Division is composed of retail merchants, large corporations and small entrepreneurial enterprises. The merchants and retailers, whether groceries, restaurants, or a major discount department store, will place a different value on education beyond high school than service or government organizations such as a hospitals, police departments or state agencies. Most of the responses by employers with organizations in the Retail division viewed education as having only limited value at best. The skills they needed from their employees were not of a type that could be gained in an educational setting. If education is viewed as being not really essential and the few individuals in FATE #3 who were hired would go into management, employees from FATE #1 would be relegated to the myriad of minimum wage or low paying entry-level clerical and sales positions which historically are seasonal and experience a high degree of annual turnover.

> There is no job at our stores which requires any type of college education nor do they even require a high school education. Not to say that it [post-secondary education] wouldn't be of a great help to a person. [Convenience Store]

> Anyone with formal education would excel over folks with just a high school education, from doing calculations to just staying on top of things. However, there are a number of talented individuals with us who have only a high school education but have been in the industry for a number of years and just based on on-the-job experience have done very, very well. [Grocery chain]

The nonsignificant differences in the number of individuals in all eight other SIC Divisions strongly suggest that graduates in FATE #1 have an equivalent array of opportunities available to them as do individuals in FATE #3. Even though the type of opportunities would vary due to different entry-level education requirements, the number and variety of potential positions are relatively uniform and proportional across different levels of educational achievement. This strongly suggests that the forces that ultimately determine the availability of positions in specific industries are primarily the business climate and resulting effect on the job market, rather than industry specific hiring policies based on educational differences.

Completing an Associate in Arts degree while employed does little immediate financial good for a graduate within the organizations contacted. Only a few employers noted that there was an immediate increase in salary with completion of an Associate in Arts degree, and this was due to statutory requirements related to education more often than employer policy. A point that many employers, especially public sector employers, made repeatedly was that anyone who completes an Associate in Arts degree would then open up a new array of potential jobs for which they were now qualified.

> No. [Are any new opportunities available?] Yes, I would say often it does. [Could you give an example?] In the clerical field if we have a person who is at staff assistant II, if they got their degree, it would be easier for them to get a promotion to an administrative assistant, the next highest position.

> That is not to say that they couldn't do that without a degree, but it would look good.
>
> Not within the same job class, the only recognition is that they are now qualified for more [job] titles. There is no incentive program or award that will increase the salary simply because of the completion of the AA degree. It opens more "doors" but it does nothing in your current class.

Within the highly structured bureaucratic hierarchy, all positions are carefully defined and specific qualifications are usually assigned based on a variety of internal criteria. When an employee improves their educational credentials and combines these with the accrued experience and work record gained during the time they have been employed, these combine to increase the array of potential internal advancement opportunities available to the Associate in Arts degree graduate.

A Hedge Against Technological Displacement of Skills

Of all the aspects of Weisbrod's direct benefits of education accumulated by a student this was by far the most difficult to evaluate. The employer responses were extremely varied and diverse in describing the skills that an Associate in Arts degree graduate would bring into the job market. It was possible, however, to aggregate the responses into the two broad categories of academic skills and maturity factors (see Figure 2-3, pg. 36)).

The employers interviewed frequently mentioned specific academic skills as being beneficial, specifically communication skills such as writing, grammar, and listening skills. Only two employers mentioned specific

mathematics skills and these skills were at a low order of proficiency, and were basically computational speed and accuracy which were of concern.

The perceptions clustered within the category maturity factors were combined because the comments made by the employers indicated that job performance, organizational skills or maturity factors such as ability to deal with the public, interpersonal skills, ability to prioritize tasks, a commitment to completion of a task (the degree), and an emotional and behavioral sophistication, were the dominant skills Associate in Arts graduates brought into a new job. Many employers also stated that the absolute age of the individual was not an real factor in the maturity of the individual, it was specific behaviors which reflected an individual's maturity, not the age.

Hazler and Latto (1987) surveyed 46 employers of high school graduates which represented over 6,300 entry-level jobs. The employers interviewed in this recent study indicated that the following skills were desired in their entry-level employees:

1. following spoken instructions,
2. reading and understanding what has been read,
3. following written instructions,
4. speaking and listening and,
5. thinking and solving problems (p. 132).

Because these primary skills which employers of high school graduates hold in high regard are similar to the skills

perceived as being present in greater quantity in Associate in Arts degree graduates by their employers, then the Associate in Arts degree would most assuredly be viewed by employers as a definite plus. This was definitely the case in the interviews. Over 75% of all of the FATE #1 employers stated that having an Associate in Arts degree was a distinctly positive factor at the time of hiring. It must be stressed at this juncture that employers also emphasized that hiring decisions were not restricted to just these perceptions. Other factors such as previous experience, employer references, comparisons to other applicants and the personal interview weigh heavily in the final hiring decision.

The Applicant Selection Guide (Appendix B) also highlights the value of the very same skills cited by both the employers interviewed in this study and the employers in the Hazler and Latto (1987) study. The ratings categories of communication skills, motivation and interest in position, ability to accomplish assignments, planning and organizational abilities along with education are the dominant categories in terms of the total rating value computed from the selection guide. All of the desired characteristics assessed on the Applicant Selection Guide reflect the same type of Maturity Factors that were cited by the employers interviewed, as being present in greater quantities in Associate in Arts degree graduates.

The high degree of correlation between the skills or characteristics perceived as being highly desirable in an employee by the three sets of employers would strongly suggest that there are a set of skills, highly variable, yet still present in Associate in Arts degree graduates which provide them an edge over high school graduates in hiring decisions. These skills also allow the Associate in Arts degree graduate greater flexibility to be trained, greater intellectual dexterity and sophistication of thought so as to allow them to learn new skills with greater alacrity than a high school graduate. Several employers stated it directly

> Specific skills which are most evident are the writing skills, but they also demonstrate that they are not afraid of mathematics or new training on machinery or computers. We even have set up special programs for our employees at _____ CC to train them to use computers.
>
> They typically have better organizational skills, research skills, prioritizing and they develop better interpersonal skills which normally are not received in a routine work setting. It just demonstrates a commitment to academic learning.
>
> As far as skills they would be about the same, but they might be more mature about what they do. They would be able to think better and be able to understand things. Where somebody who had just high school diploma might not have the maturity to deal with the public and handle the problems that might arise.
>
> They are much more sophisticated in their thought processes. They are far more mature, not just young people, it is the maturity of thought.
>
> They would be more well-rounded, more confident, more self-assured, more capable of learning new procedures.

The Maturity Factors which are recognized in the preceding

responses illustrate that education does imbue most individuals with some characteristics that are perceived to be desirable by employers. It must be pointed out that simply aging and the accumulation of experiences which occur in day to day living and are not related to the classroom experiences, must also color the maturational processes which occurs within an individual. Yet it must also be recognized the independent learning that invariably occurs within the environment of higher education is certainly not the same academic pressures that is exerted within most high school programs.

Johns, Morphet, and Alexander (1983) point out that it is the perceptions of the employer which drive hiring decisions.

> The more educated person in the job market receives preferential treatment from the employer. Whether this is justified is largely irrelevant if the marketplace responds in this manner [emphasis added]. Employers appear to recognize that the educated worker has favorable external effects on other workers and on the firm in general. An interdependence exists whereby both the worker and the firm have a financial interest in the education of fellow workers (pg. 53)

They go on to point out that one of the main reasons why employers give preference to the more educated worker is that they are easier to train to job-specific skills than a less educated worker.

> Employers believe that education of the employee improves the financial potential of the firm. There is a definite positive relationship between the amount of formal education and on-the-job training received. Firms apparently have found

> that greater productivity can be achieved with less cost of investing in the more educated employees. Greater benefits can be obtained by grafting job training on to the knowledge already acquired from formal schooling. (pg. 53)

It is apparent from the employer responses that employers hold a specific set of perceptions concerning the skills and abilities of Associate in Arts degree graduates. Whether these perceptions are accurate or not is largely irrelevant. If these perceptions are incorporated into hiring and promotions decisions, then these perceptions are indeed a factor to be considered when analyzing the credential value of a degree. Since employers view Associate in Arts degree graduates as having acquired specific academic skills and maturity factors, and if these factors are used for hiring and promotion or training decisions, then the Associate in Arts degree does imply a more malleable employee and one for whom education acts as a hedge against the "vicissitudes of technological change" because additional education is perceived to provide a higher degree of potential flexibility in job-specific training. Or as Johns, Morphet and Alexander (1983) stated it

> Thus, education may be viewed as a type of private (and social) hedge against technological displacement....Better-educated workers may well have the edge in communication, discipline of the mind, flexibility and adaptability. Also, the more educated the worker, the more likely he or she is to be receptive to new ideas and knowledge. (pp. 53-54)

Direct Social Benefits

Of the four direct social benefits described by Weisbrod (1964), only three--increased production possibilities, increased tax base, and a reduced need to incur costs--can be approximated using this data set. Even so, the tool used to estimate all three benefits was the same unit of measure. Individuals who are active in the labor market, generally, are less likely to be a drain on public funds by requiring unemployment compensation, welfare, Aid to Dependent Children or any number of other widely available social programs designed to aid individuals with little or no income. Ashenfelter and Ham (1979) proposed, based on a sample of 779 U.S. white males, that a direct relationship between schooling and unemployment existed, "schooling produces this effect on unemployment solely by reducing the incidence of unemployment spells among the workers in our sample" (p. S114). Ashenfelter and Ham (1979) concluded

> We also find that a considerable fraction of the measured unemployment hours behaves as if it was primarily a part of the offer to sell labor and does, therefore, represent real constraints on choice. It follows that educational investments do relax the constraints on choice that workers face in the labor market, but whether these are merely private or also social gains cannot be determined without further research. (p. S115)

Nickell (1979) working with a British dataset (n=6900) concluded that "increases in the level of an individual's education up to but not beyond the university entrance lead to strong reductions in the number of unemployment spells

which he can expect to experience over his lifetime" (p. S129). Johns, Morphet, and Alexander (1983) concurred with previous work and stated

> Even though the correlation is rather weak, the more educated, being more generally employed in service jobs, have greater employment stability. . . . Consequently, the less-educated labor force is more susceptible to layoffs due to advances in technology and fluctuations in types of goods produced and methods of production. (pg. 53)

The data available from the dataset were in the form of the number of weeks employed per quarter. These data were analyzed in two ways. The first was a direct comparison of the mean number of weeks employed with no adjustments being made except to total both full-time and part-time weeks worked per quarter. The mean values were within less than one week of each other for all three FATEs with a nonsignificant F statistic (see Table 2-8, pg. 28).

The second analysis attempted to adjust for individuals who did not work all five quarters and thus had a lower total weeks worked in the first analysis but were still employed. The second analysis totaled all weeks worked and determined an mean value for all quarters worked for each individual. This mean quarterly value was then multiplied by four to produce a value extrapolated to represent the average weeks worked for a standardized year. These values also were not significantly different among the FATEs. This strongly suggests if unemployment and education are related in a meaningful way, and there was no significant difference between the three FATEs in terms of

the total labor productivity per FATE when measured by number of weeks worked, then there should be no significant difference between the FATEs in the costs to society for unemployment compensation and other social programs designed to assist the unemployed. This conclusion is the last piece evidence utilized to evaluate the Associate in Arts degree and its relative value in the market place.

CHAPTER IV
CONCLUSIONS

The conclusions to be drawn from this study must be viewed in light of the limitations inherent within the dataset and the specific population from which these data were gathered. When using the framework of the benefits to be derived from increases in human capital which result from investments in education, the results strongly suggest that in the first eight years following graduation with an Associate in Arts degree, the graduates in FATE #1 compare very favorably with the graduates in FATE #3.

This conclusion is supported by virtually every direct comparison utilized within this study. First, the rate of return was greater for individuals in FATE #1 than for individuals within FATE #3. The negative internal rate of return in the comparison of FATE #3 with FATE #1 suggests that overall the deferred earnings anticipated by individuals in FATE #3 have not yet offset the additional costs of two years of university preparation. Secondly, when comparing mean annual incomes of all individuals in all three FATEs there was no significant difference between FATE #1 and FATE #3. When disaggregated into SIC divisions, in five out of nine divisions, there was no significant difference between FATE #1 and FATE #3. In the General Services and Retail Divisions there were significant differences in favor of the individuals in FATE #3 as compared to FATE #1. Intuitively this is a

reasonable conclusion because of the high levels of academic credentials required for placement in medical, legal and social service occupations. In addition, in retail establishments an initial hiring dichotomy exists at initial placement for clerical and management positions, with management employees being required to have a baccalaureate degree and minimum wage positions going to almost all other initial hires.

When examining the financial options returns described by Weisbrod, it becomes very clear that almost all employers interviewed placed a high degree of value on an educated employee. Even though most employers do not have specific positions which require an Associate in Arts degree as a minimum entry level requirement, an graduate in the job market would not be competing with baccalaureate degree graduates for most positions. The baccalaureate degree <u>is</u> viewed as a minimum entry requirement for many jobs in all SIC divisions and the graduates with only an Associate in Arts degree would be competing primarily with other job candidates with only a high school diploma not with baccalaureate degree graduates. Within this arena the individual with an Associate in Arts degree is viewed very favorably in comparison a high school graduate. Employers view applicants with an Associate in Arts degree as better potential employee, all other factors being equal.

Once an individual within FATE #1 is hired and usually employed for a set period of time, they become eligible for

a broader array of educational benefits, in general, than individuals in FATE #3. Employers had more programs with better benefits for individuals pursuing an associate degree or a baccalaureate degree, than for individuals pursuing graduate level degrees. Although in some General Service major groups (i.e. education and health services) individuals in FATE #3 are encouraged to pursue graduate degrees, as a general rule, employers expressed hesitancy to allow employees to follow employer supported academic programs which weren't viewed as being directly beneficial to the employer. Some employers, even in the public sector, expressed concerns that individuals in FATE #3 would soon leave the public sector following completion of advanced training due to the lucrative opportunities in the private sector, therefore the employers were extremely hesitant to fund graduate degree programs. Since Weisbrod (1964) stated that the value of the financial option returns were calculated by multiplying the potential of taking advantage of using these options by the incremental increase in wages to be gained by completing additional education, these data clearly indicate that much higher potential for individuals in FATE #1 to take advantage of employer supported educational benefits than for individuals in FATE #3 to pursue graduate degrees. This increased potential for use combined with the relatively small difference in financial gains incurred with both levels of increased education, would also support the

contention that individuals in FATE #1 potentially stand to receive greater overall gains in the area of financial option returns than individuals in FATE #3.

The limited differences in incomes when comparing individuals in FATEs #1 and #3, coupled with the liberal educational aid available to graduates in FATE #1 employed especially in the Public Administration division and the highly structured hiring and promotion policies, aid the graduates in FATE #1 to increase their individual productivity and also increase the direct financial benefits accrued within this division. The mere existence of a statutory salary incentive program for the police and fire employees, is an important indicator of the value placed in the Associate in Arts degree by employers in the public sector.

The opportunity options for all three FATEs would appear to be more dependent on external labor market forces than on differences in education. Even though the array of potential jobs available to baccalaureate graduates is quite different than those positions available to individuals in FATE #1, the number of graduates in each FATE for each SIC division other than the Retail Division, was not significantly different from the total number of graduates in FATE #1 and FATE #3, therefore the distribution of graduates was not significantly different than could be expected in a distribution of individuals by SIC division within the job market that is proportionate to

the number of employers and available positions. This implies that the type of jobs available at the time of the job search would have a greater impact on the type of job secured than the academic credentials held at the time of initial hiring. The Retail division had a higher than expected number of FATE #1 graduates working in relatively low paying jobs. This would strongly suggest that job availability (especially for a second family income) would make the seasonal, temporary, or part-time retail positions attractive to individuals in FATE #1 and could be used to augment total income in a significant way over the period of time covered by this research.

The Direct Social Benefits provided by education also supports the observation that there was no significant difference in the on-the-job labor productivity as indicated by the comparison of the total number of weeks worked during a five quarter period for all three FATEs. This lack of significance between the number of weeks worked suggests that there is no difference between the costs incurred by society in the support of an individual with an Associate in Arts degree than for an individual with more education (FATE #2 and FATE #3).

Finally, when using the Associate in Arts degree as a hedge against technological displacement of skills, it would appear that Associate in Arts degree graduates were perceived by employers as being imbued with a greater number of positive characteristics as a group than a

comparable group of high school graduates. High school graduates were reported by the employers to be the group of applicants which the Associate in Arts degree graduate would most likely be competing with for positions that do not require a baccalaureate degree. This perceived added value along with an expressed disappointment with the academic skills of high school job applicants, makes individuals in FATE #1 very attractive applicants to many of the non-service and non-retail employers. Not only are academic skills viewed as being stronger within individuals in FATE #1 when compared with high school graduates but employers view Associate in Arts degree graduates in general to have maturity factors which contribute to an employee that is subtly more readily trainable or retrainable in whatever position they are holding. This increased intellectual potential in combination with increased flexibility for training (either on-the-job or in an academic setting) makes the individuals in FATE #1 a very attractive employee from the standpoint of employer. The Associate in Arts degree graduate will usually be paid the same wage initially as a high school graduate, however, they are potentially, from the employer's perspective, bringing more skills and flexibility into the work place. As pointed out by Johns, Morphet and Alexander (1983)

> The more educated person in the job market receives preferential treatment from the employer. Whether this is justified is largely irrelevant if the marketplace responds in this manner. Employers appear to recognize that the

> educated worker has favorable external benefits on the other workers and on the firm in general. (p. 53)

Summary

When all components of Weisbrod's benefits of further education are viewed as a whole, it is evident that eight years following graduation with an Associate in Arts degree, community college graduates in SIC divisions in which specific academic training is essential for initial employment, individuals in FATE #3 have a distinct economic advantage over individuals in FATE #1. Overall, slightly less than 50% of all individuals in FATEs #1 and #3 are in the General Services and Retail SIC divisions and these individuals do conform to Weisbrod's theoretical structure. The remaining 50%+ of the graduates, however, indicate that in their SIC divisions, there are greater or equivalent direct financial returns, financial option returns, or opportunity options. In hiring decisions, the individuals in FATE #1 have a distinct competitive advantage over their competition, high school graduates, for most entry-level positions. The employers view that Associate in Arts degree graduates provide a more malleable employee in terms of initial training and future job related training. These employer perceptions would then strongly support Weisbrod's assertion that additional education allows for a greater resistance to a technological displacement of skills for the more educated employee.

Recommendations for Further Research

Up to this time there have only been a handful of studies which address the economic impact of community college associate degree programs on graduates. Of the few studies which include the Associate in Arts degree as a component, several point to an internal rate of return of which is usually of intermediate value between that of a high school graduate and a baccalaureate graduate. Taubman and Wales (1975) conducted one of the first studies to determine that the group they identified as college dropouts (having 1-3 years of college) had an internal rate of return which exceeded that of college graduates. McMahon and Wagner (1982) pointed out that community and junior colleges with their technical programs offer relatively high returns to the graduate for the amount of money invested. The thrust of almost all of the limited previous work has been either to use census data in which the Associate in Arts degree graduates are combined with college dropouts into a single category (1-3 years of college) or they examine exclusively the value of the Associate in Science (technical) degrees and completely overlook the Associate in Arts graduates.

The primary purpose of this study was to see if the an Associate in Arts had a provided a distinct set of benefit to graduates who have not pursued further education. The perceived value of an Associate in Arts degree expressed by most of the employers interviewed was definitely in line

with Johns, Morphet, and Alexander (1983) assertion that employees with more education received preferential treatment upon initial hiring and whether these perceptions are justified or not, they still influence the hiring practices and the benefits offered by employers.

The most interesting and surprising results of this study are the areas in which more thorough research appears to be warranted. First, the reasons behind the negative rate of return when comparing FATE #3 and FATE #1 should be examined much more fully. Indeed, if an entire graduating class could be studied longitudinally, with rates of return calculated at different chronological distances from graduation, the rates of return should show trends which would define the point in time and in an individual's career where the deferred earnings gained by the baccalaureate degree recipient surpasses the earnings of individuals with less education. At this point the rate of return should demonstrate a positive value for the baccalaureate degree.

Secondly, the disaggregated incomes for Associate in Arts degree graduates in each major group should also be analyzed. The dramatic differences in incomes among Associate in Arts degree graduates, especially where FATE #1 is significantly different than FATE #3 in the favor of FATE #1, should be examined more thoroughly. There is an important relationship between education and income here which has not been investigated any other study. This

relationship is probably industry specific and could be used to guide graduates at all levels of education in selecting the most lucrative and personally satisfying career field to enter.

Finally, the last suggestion for additional research surrounds the samples themselves. Through the interview process it became apparent that there were potentially more baccalaureate graduates among the individuals in FATE #1 than was determined simply by a comparison with the SUS database. Incongruities between the assignment of graduates to the three FATEs and the jobs employers reported the graduates holding were encountered often enough to suggest that direct contact with the graduate is essential to determine accurately the actual rate of transfer to private or out-of-state schools. It was assumed that individuals who attend a community college would be on limited budgets or be economically tied to a specific geographic area, therefore the relatively low cost and high convenience offered by state universities would limit the number of individuals in FATE #1 attending private colleges and universities. Accurately defining the rate of transfer is essential in determining the effectiveness of transfer programs. All previous state level studies have utilized a definition of transfer success that has almost exclusively focused on those graduates transferring to a state university. By assuming that the rate of transfer to non-public institutions be

relatively low researchers examining transfer programs could seriously underestimate the total transfer success. If in fact the number of graduates transferring to out-of-state or private colleges and universities is larger than thought, i.e. at a rate of 15-20% above current estimates, this could have a major impact on all state level assessments of community college effectiveness and require that these studies revise their methodologies for assessing the rate of transfer to the university by Associate in Arts graduates and reevaluate prior assessments of rates of transfer.

APPENDIX A

INITIAL CONTACT LETTER SENT TO EMPLOYERS

August 21, 1989

ABC Corporation
123 Lakeview Drive
Gator City, Fl 32611

Attn: Director of Personnel

Gentlemen:

As a part of an on-going study of Florida Community College graduates sponsored by the Institute of Higher education, an individual in your employ has been randomly selected from a sample of over 2000 Associate in Arts degree graduates. The purpose of this study is to evaluate the relative value of an Associate in Arts degree in the labor market.

As one component of the total study, it is necessary to interview a small subset of representatives from the firms employing each of these graduates.

The purpose of this letter is really two-fold: first, to introduce myself and acquaint you with the purpose of the study, and second, to request your office's assistance in contacting the appropriate individuals for interviews.

I will be telephoning your office sometime during the next three weeks and I hope it will be possible to speak with you or your representative at that time.

Thank you for your assistance,

R. Bruce Judd
Research Associate
Institute of Higher Education
University of Florida
(904) 392-0745
(813) 489-9429

APPENDIX B

APPLICANT SELECTION GUIDE

FORM 250 613-01
PERSONNEL
04/88

APPLICANT SELECTION GUIDE

PAYROLL UNIT & JOB CLASS	POSITION NUMBER & CLASS TITLE	ADVERTISING PERIOD TO
DATE POSITION FILLED	PERSON APPOINTED	REFERRAL SOURCE OF APPOINTEE
INTERVIEWERS		CERTIFICATE NO./EXPIRATION DATE

(1) MINIMUM TRAINING AND EXPERIENCE REQUIREMENTS

a. _____

b. _____

(2) PRINCIPAL WORK ASSIGNMENTS

a. _____

b. _____

(3) SPECIAL CONSIDERATIONS/QUALITIES

a. _____

b. _____

(4) NAME	BIRTH MONTH YEAR	RACE	SEX	HANDICAPPED	(5) QUALIFIED	NOT QUALIFIED	(6) Communication Skills K Factor 1.2 Option		Motivation & Interest in Position K Factor 1.0 Option		Knowledge & Skills of Occupational Subject K Factor 1.5 Option		Ability to Accomplish Assignments K Factor 1.3 Option		Education K Factor 1.3 Option		Planning & Organization Abilities K Factor 1.5 Option		K Factor 1.0 Option		K Factor 1.0 Option		(7) VETERANS PREFERENCE	(8) CAPOINTS ADVANCEMENT	(9) FINAL SCORE
							Rating	Sub Total	Rating	Sub Total	Rating	Sub Total	Rating	Sub Total	Rating	Sub Total	Rating	Sub Total	Rating	Sub Total	Rating	Sub Total			
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APPENDIX C

QUESTIONS USED DURING EMPLOYER INTERVIEWS

Telephone Interview Questions for Employers

Question 1. Do you know how many employees in your organization have Associate in Arts degrees?

Question 2. Does your organization have any positions which specifically require a minimum of an Associate in Arts degree?

Question 3. How does your organization use an individual's education, specifically the Associate in Arts degree in hiring decisions?

Question 4. How does this organization use an individual's education to determine starting salary?

Question 5. Does your organization have any on-the-job training programs?

Question 6. How does your organization encourage employees without a baccalaureate degree to pursue further education?

Question 7. What skills and abilities do you perceive that an individual with an Associate in Arts degree brings into the workplace?

Question 8. If an individual is hired with a high school diploma and while employed by your organization they complete their Associate in Arts degree, would they automatically get a raise or any other consideration as a result of graduation?

References

Ashenfelter, O., & Ham, J. (1979). Education, unemployment and earnings. Journal of Political Economy, 87, S99-S116.

Becker, G. S. (1975). Human capital, a theoretical and empirical analysis with special reference to education (2nd ed.). New York: National Bureau of Economic Research.

Blair, L. M., Finn, M. G., & Stevenson, W. (1981). The returns to the associate degree for technicians. The Journal of Human Resources, 16(3), 449-458.

Blaug, M. (Ed.). (1970). An introduction to the economics of education. London: Penguin Press.

Carnoy, M., & Marenbach, D. (1975). The return to schooling in the United States, 1939-1969. Journal of Human Resources, 10, 312-331.

Eckaus, R. S. (1973). Estimating the returns to education: A disaggregated approach. Berkeley: Carnegie Commission on Higher Education.

Freeman, R. (1975). Overinvestment in college training. The Journal of Human Resources, 10, 287-311.

Hanoch, G. (1967). An economic analysis of earnings and schooling. Journal of Human Resources, 2, 310-329.

Hansen, W. L. (1963). Total and private rates of return to investment in schooling. Journal of Political Economy, 71, 128-140.

Hazler, R. J., & Latto, L. D. (1987). Employers' opinions on the attitudes and skills of high school graduates. Journal of Employment Counseling. 130-136.

Johns, R. L., Morphet, E. L., & Alexander, K. (1983) The Economics and Financing of Education (4th Ed.). Englewood Cliffs: Prentice-Hall, Inc.

Judd, R. B. (1988). The value of a terminal Associate in Arts degree to a community college graduate: Phase I -A portrait of a graduating class. In M. Mehallis (Ed.) Proceedings of the Twenty-first Annual Florida Statewide Conference on Institutional Research, (pp. 45-72). Ft. Lauderdale: Nova University.

Leslie, L. L., & Brinkman, P. (1986). Rates of return to higher education: An intensive examination. In J. Smart (ed.), Higher Education: Handbook of Theory and Research. Vol. 2. (pp. 207-234). New York: Agathon Press.

McMahon, W. W., & Wagner, A. P. (1982). The monetary returns to education as a partial social efficiency criteria. In W. W. McMahon and T. G. Geske (Eds.), Financing Education. (pp. 150-185). Urbana: University of Illinois Press.

Mincer, J. (1962) On-the-job training: Costs, returns, and some implications. Journal of Political Economy, 70, 50-79.

Nickell, S. (1979). Education and lifetime patterns of unemployment. Journal of Political Economy, 87(5), S117-S131.

Psacharopoulos G., & Woodhall, M. (1985). Cost-benefit analysis of educational investment. In G. Psacharopoulos & M. Woodhall (Eds.), Education for Development: An Analysis of Investment Choices (pp. 29-71). New York: Oxford University Press.

Quattrociocchi, S. M. (1980). Education, employment and income. Lifelong Learning: The Adult Years, 8-9, 26-27.

Raymond, R., & Sesnowitz, M. (1975) The returns to investments in higher education: Some new evidence. Journal of Human Resources, 10, 139-154.

Taubman, P., & Wales, T. (1973) Higher education, mental ability and screening. Journal of Political Economy, 81, 28-55.

Weisbrod, B. A. (1964). External benefits of public education. Princeton: Industrial Relations Section.

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